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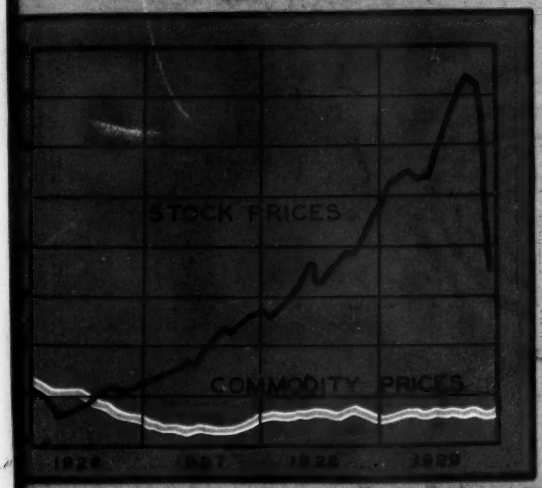
DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising



What of 1930?

A conservative estimate good ground for optimism

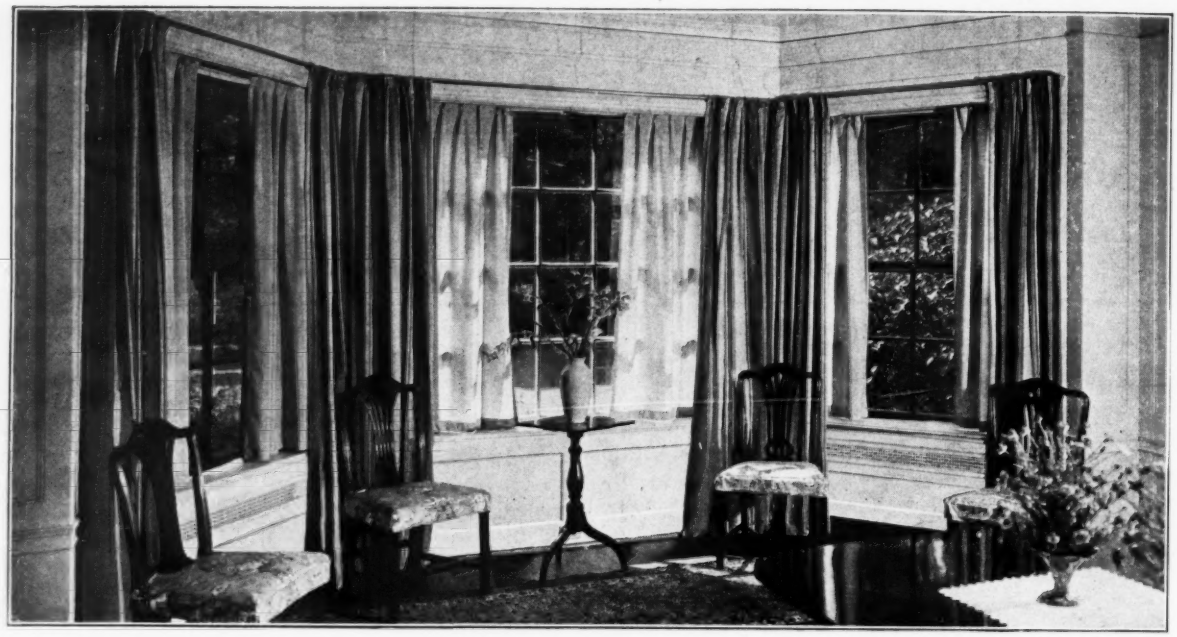
"I feel that there has been no indulgence in industrial excess such as occurred in 1920 and in previous periods of inflation." —Howard Coonley, president of the Walworth Co.

Compare the first two charts. Commodity prices were boomed in 1920-21 and crashed with stock prices. But in 1928-29 commodity prices remained steady and only stock prices broke, a promise of freedom from any depression in 1930.

JANUARY
11,
1930

"Money is available in sufficient quantities and at satisfactory rates for all commercial enterprises. It is gradually becoming available for new construction and engineering projects, at rates which are comparatively low." — Franklyn Hobbs, director of research of the Central Trust Company of Illinois.

The chart shows that over 3 billion dollars were released in October and November and can now be used in business and construction finances.



Radiators and bay windows fit each other when they're ROBRAS 20-20 Radiators

The point being this:

You can tell your customers that all restrictions on placing radiators are off. That you can show them how to fit their radiators into any part of their rooms because the radiators don't go into the rooms at all.

They don't — if they're Robras 20-20 Radiators.

They go into the walls.

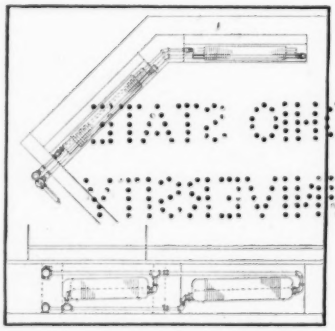
Obviously, Robras 20-20 Radiators must be compact. They are. They are 20 per cent the size of equal cast-iron radiators. They are 20 per cent the weight. They can be installed four or five times as quickly.

They cost more? Sure. But the discount is better than on old-fashioned radiators. They cost you less to install. You make more per job!

There's a lot to this story of these sturdy, electrically-welded, fast-heating, freeze-proof, brass radiators.

Let's send it to you, with data sheets and price lists. Ask us—today.

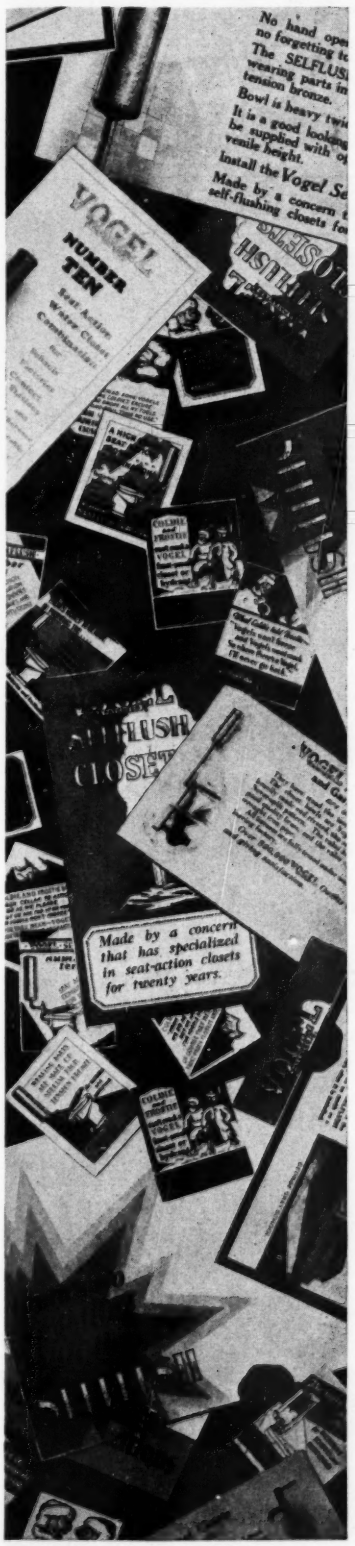
In the walls—out of sight—out of the way



A space under the windows. Compact Robras Radiators. And that's all.

ROME BRASS RADIATOR CORPORATION, 1 East 42nd Street, New York City

DIRECT MAIL TO HELP YOU . . . . . SELL VOGEL PRODUCTS



Backing up page space in 14 publications going direct to your customers

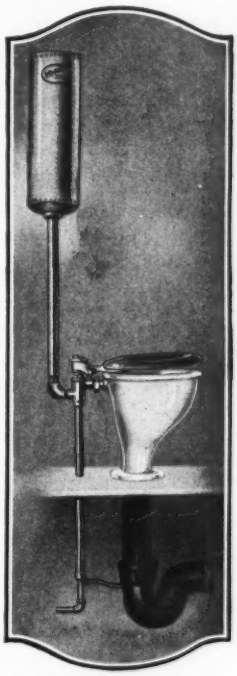
The twins are afraid
That their plans will fail
Because of Vogel
Direct-by-mail

Vogel sends out
So darn much stuff
That Coldie and Frostie
Are finding it tough

'Cause folders and blotters
And broadsides as well
Are sent to the plumber
To help him sell

You know what this means
Without being told
That more and more Vogels
Are sure to be sold

And more and more profits
For plumbers to make
'Cause Vogels won't freeze
And Vogels won't break



Number One Vogel Frost-Proof Closet. Simple in operation. Sturdy in construction. Half a million in operation.

Vogel Frost-Proof Hydrant

STICKERS to put on your letters. Blotters to send to your customers. Folders to send out with your mail.

All featuring VOGEL Frost-Proof Closets and Hydrants for mill villages and exposed places—and the VOGEL Number Ten seat-action closet combination for plants, factories, schools and institutions of all kinds.

Folders and blotters are imprinted with your name and address. Tell us how many you need.

JOSEPH A. VOGEL COMPANY

WILMINGTON, DEL.
ST. LOUIS, MO.

See inside back page for VOGEL SEL-FLUSH advertisement. Also see pages 104 and 105.

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DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

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WOLVERINE

THE SYMBOL OF DEPENDABILITY

The Wolverine Brass Works have the complete confidence of the Master Plumbers. This confidence is more than a source of justifiable pride. It is an obligation—a responsibility—an inspiration. It makes imperative, their high standard of manufacture, that has become symbolical of Dependability.

WOLVERINE BRASS WORKS

GRAND RAPIDS MICHIGAN

We Sell the Retail Plumbing Trade Exclusively

"Domestic Engineering" is the current and up-to-date encyclopedia of the plumbing and heating industry.

Between Ourselves

"It seems unlikely that the cost of living will change much in 1930." — Col. L. P. Ayres, noted economist.

Like every other useful object, the radiator has a history. Many of you can remember far enough back when radiators were considerably different in appearance than they are now. In fact, there are still many primitive examples to be found in the older buildings of every city.

Your Editor

IT MAY surprise some of you, however, to learn that patents were issued for radiator apparatus as long as 87 years ago. These earlier systems of warming buildings by means of hot water were really closed systems, constructed almost exclusively of three-quarter inch piping; in reality they were coils placed about the sides of rooms in an awkward style. Nevertheless, the development of any idea, however crude or primitive it may have been at the time of its inception, the changes, alterations and adaptations accompanying its recognition as a prime utility to civilization, always presents an interesting study. For this reason, we have provided an article in this issue by Ara Marcus Daniels, entitled "A History of the Development of the Radiator."

DOMESTIC ENGINEERING, in the present issue, has made a thorough study of the economic prospects for the year 1930; an analysis prepared after an attentive review of basic business conditions. We seek to show that, while 1930 may not be an extraordinary year, it still will be on a par with the average of the last five years, which, on the whole, means a good year and a normal year. We have striven throughout to maintain an even and conservative tone, making no predictions that are not backed by recognizable economic indications.

THE first story in the Merchandising Feature Section of this issue is entitled "Continued," which reviews the management policies of the Dallas Plumbing Co. of Dallas, Tex., showing how, over a period of years, these policies and ideals have contributed to the notable success of this organization. The plumbing and heating contractor in any part of the country will find that these same management and merchandising ideas can be used effectively; and for that reason we suggest that every contractor give it his attention. Also, in this issue, the Master Salesman analyzes the methods of a successful contractor working on a "lead."

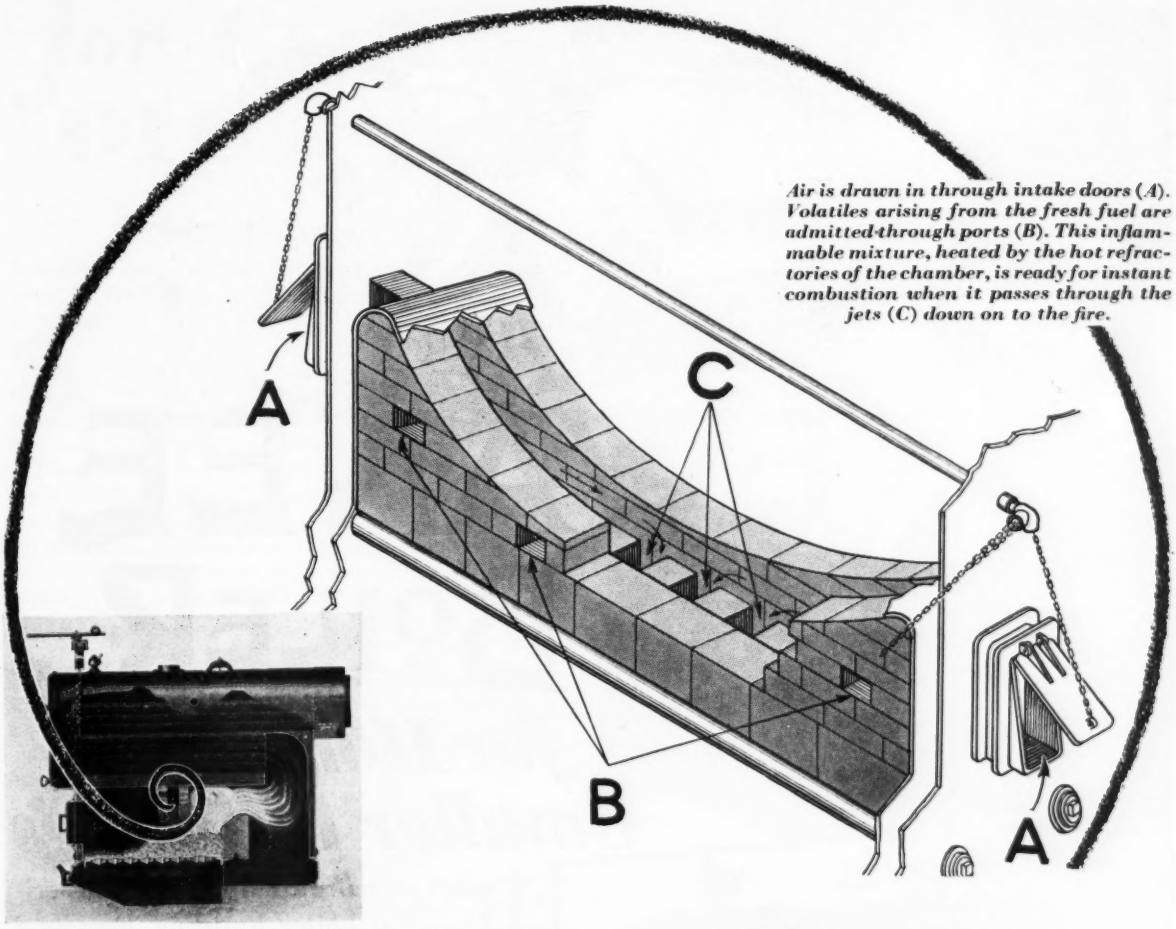
"WE have been subscribers for DOMESTIC ENGINEERING for some time and have found it both interesting and instructive in all cases."
—C. M. Kennedy, 556 Broadway, Buffalo, N. Y.

IN THIS issue we are reproducing several pages of pictures taken from forty year old copies of "Domestic Engineering," which illustrate very clearly the style in plumbing and heating equipment of the so-called gay nineties. Some of the illustrations show entire bathrooms furnished, in what now appears to us, very peculiar looking style. You will find these pictorial reminiscences entertaining, if not educational.

THE article entitled "Combination House and Fire Tanks" on page sixty-five should prove of some interest to contractors who have occasion to make such installations. Discussions of the desirability or undesirability of house tanks have appeared in these pages from time to time, but for the purpose of this article, it has been definitely decided that a house tank is necessary. While, for many years, it was the custom to have a separate house and fire tank, which involved considerable expense, installations, as now made, permit a greater use of the combined tank.

THE January 25 issue of "Domestic Engineering" will contain an article by George Mellen who gives an interesting account of a unique plumbing installation in Honolulu, Hawaii, demonstrating the engineering ability and ingenuity required in this particular case to overcome a series of unusual obstacles. In the first place, one of the great difficulties in even starting construction of the building, where the plumbing engineer encountered so many problems, was the presence of fifteen springs which gushed fresh and salt water, flooding the excavations nearly as fast as the pumps carried the water away. But how these problems were solved will be told in the next issue.

The man who is so busy that he does not have time to read his trade paper is like the man who was so busy chopping wood that he did not have time to sharpen his axe



Air is drawn in through intake doors (A). Volatiles arising from the fresh fuel are admitted through ports (B). This inflammable mixture, heated by the hot refractories of the chamber, is ready for instant combustion when it passes through the jets (C) down on to the fire.

Heated Air Over the Fire Makes It Smokeless

IT ASSURES plenty of air—*heated* air—*over* the fire!....That is why this Heggie-Simplex boiler burns any fuel smokelessly!

A refractory chamber with intake doors on both sides of the boiler admits the additional oxygen essential to smokeless combustion, but which cannot be drawn through the fuel bed alone.

Built of refractories, this chamber thoroughly heats the air before passing it down on to the fire.

Here it mixes with the soot-laden gases streaming under the chamber. The refractory baffle wall to the rear sets this inflammable mixture whirling in a turbulent eddy of incandescent flame. Oxygen and gases become thoroughly mixed. All smoke and combustibles are burned. The auxiliary chamber beyond provides additional space for completing combustion before entering the flues.

For complete facts, write Heggie-Simplex Boiler Company, Joliet, Ill.; representatives in principal cities—telephone and address listed under "Heggie-Simplex Boilers."

HEGGIE-SIMPLEX
STEEL HEATING BOILERS

A NEW KEWANEE STEEL BOILER

for Homes and Smaller Buildings

BORN of more than 60 years experience in boiler building, here is a boiler especially designed, engineered and built to meet the demand for a *better residence heating boiler.*

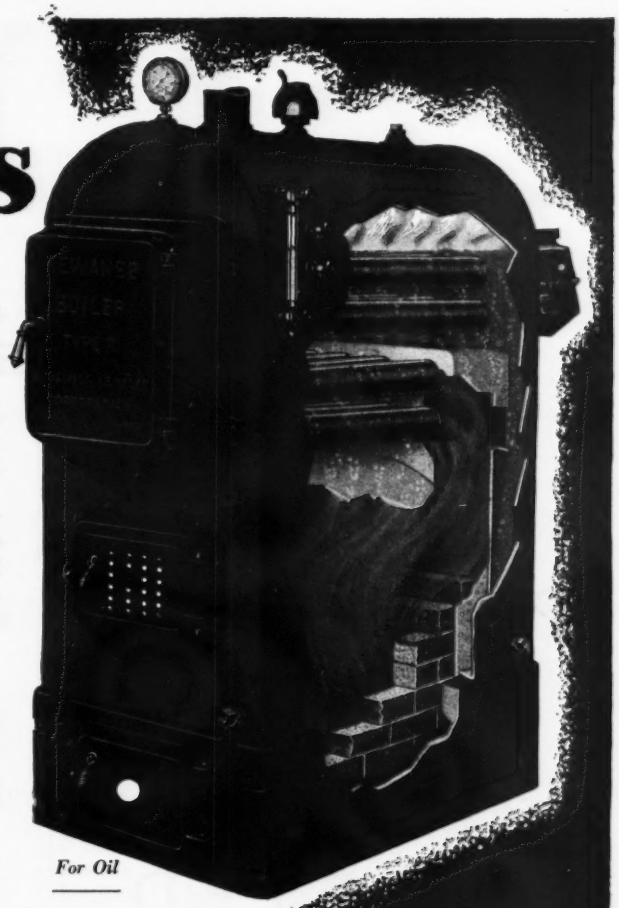
Actually—it is a climax in the development of steel boilers—a product well worthy to take its place in the Kewanee line—the most complete in the world.

In Type "R" will be found all that correctness of design; sturdiness of materials; and skilled care in manufacturing which has kept Kewanee foremost among steel heating boilers.

Even to the smallest details it is built UP to the rigid Kewanee requirements—a **boiler that can be relied upon to give many extra years of service**—not a boiler built DOWN to a price.

NOW—there's a Kewanee Steel Boiler

for COAL, OIL *or* GAS



For Oil

Features of Design

A *bigger, higher combustion chamber* provides plenty of space for the fuel gases to mix with air and burn completely. Fewer firings are needed because the firebox permits carrying a larger bed of coal.

The "*right-side-up*" *crown sheet*—a distinctive Kewanee feature—is self-cleaning and self-draining. Sediment and scale cannot collect above the hottest fire zone. This construction also adds strength.

The Double-Pass gives longer travel of gases as they are given a "Forward Pass," then a "Backward Pass"—*twice the length of the boiler*—before reaching the stack. All of the useful heat is thus absorbed by the water in the boiler.

A *more generous steam space* provides ample storage capacity, and prevents "priming."

Features of Construction

Thicker, *heavier steel plate*, with all flat surfaces stiffened with threaded and riveted-down staybolts, gives Type R a strength which insures **many extra years of service.**

Castings are heavier—the smaller pieces being of tough malleable iron.

All *doors are surface ground and fitted* tight to frame. Doors exposed to heat are protected with high temperature insulating material, preventing escape of valuable heat.

The base, of very heavy cast iron, goes into the basement *in one piece*, completely assembled.

Grates operate on trunnions fitted into removable sockets which rest in the base.

The damper and balanced draft doors are *back of the boiler*, and instead of being operated by chains dangling in front, are both operated by a single rod.

Conservative Ratings

Catalog Ratings are in conformity with the Steel Heating Boiler Institute's Code for low pressure heating boilers.

They will carry the total radiation load listed as their capacity and in addition will *easily handle large overloads*, with long firing periods and with low stack temperatures.

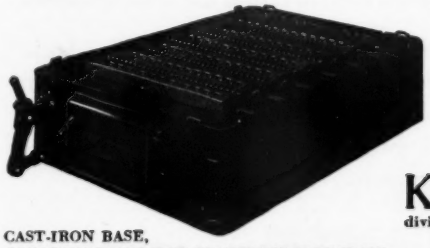
Extremely Efficient

In tests—made as nearly as possible under actual working conditions—efficiencies ran far better than the average for low pressure heating boilers.

For Coal, Oil or Gas

Specially designed and built for burning various kinds of fuel—hard or soft coal, oil or gas—there is a Type "R" for every locality.

In sizes to heat from 370 to 1960 square feet of steam, and from 590 to 3140 square feet of water radiation. Details in Catalog No. 88.



CAST-IRON BASE,
GOES INTO BASEMENT ALL READY ASSEMBLED

KEWANEE BOILER CORPORATION
division of American Radiator and Standard Sanitary Corporation
Kewanee, Illinois
Branches in 40 Principal Cities

to heat every size and type of building

PACIFIC

Presenting the Pacific Steel Boiler JACKETED

The new all steel, welded, rock-wool insulated residence boiler at an unusual price

NEW; distinctive; important to every contractor, realtor, and architect; the Pacific Jacketed Steel Boiler is announced.

All steel, it eliminates repair bills, lessens building delays, and makes satisfied owners. Welded seams make caulking needless and leakage impossible. Proved heating principles cut coal bills to the minimum.

Added to these tried Pacific advantages is the handsome new jacket of heavy gauge steel, finished in mirror-smooth baked-on blue enamel, with a resplendent red top and vitreous enamel red doors. Between boiler and jacket, a thick blanket of rock-wool insulation, steel wire reinforced, has no equal for effectiveness.

Without a peer in its field, the Pacific Jacketed Steel Boiler costs little if any more than boilers at all comparable. Complete information will prove a valuable aid in your heating selections. Write for it.

STEEL HEATING BOILERS PACIFIC WAUKEGAN ILLINOIS

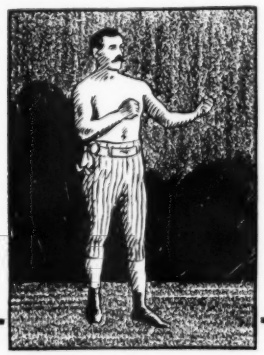
PACIFIC STEEL BOILER CORPORATION

Factories: Waukegan, Ill., Bristol, Pa.

Sales Offices in 58 Cities

Division of United States Radiator Corporation, Detroit

FAMOUS FIGHTERS



John L. Sullivan

At 19, "the Boston Strong Boy" fought his first public battle on the stage of a theater when he knocked out a pugilist who had challenged any man in the audience. In 1882 he defeated Paddy Ryan in a bare-knuckle fight for $5000 and the championship of America. In 1888 his fight with Charlie Mitchell ended in a draw in the 39th round. His greatest fight took place in 1889 when he fought Jake Kilrain 75 rounds! He remained champion for 12 years until defeated by Jim Corbett in 21 rounds at New Orleans in 1892. His courage, pugnacity and herculean strength made him a picturesque figure throughout his exciting career.

Weil-McLain Boilers *are famous for fighting fuel waste*

There are two good reasons why Weil-McLain Round Boilers, for example, are so successful in fighting fuel and heat waste. They make two of the most powerful features that ever helped to sell boilers.

Fuel-saving corrugations like this ∿∿∿

The Weil-McLain Round Boiler gives more heat and saves fuel because all the vital heat-absorbing surfaces are corrugated like this ∿∿∿, instead of flat like this ———. You can easily see that the wavy line crowds more heating surface into the same space.

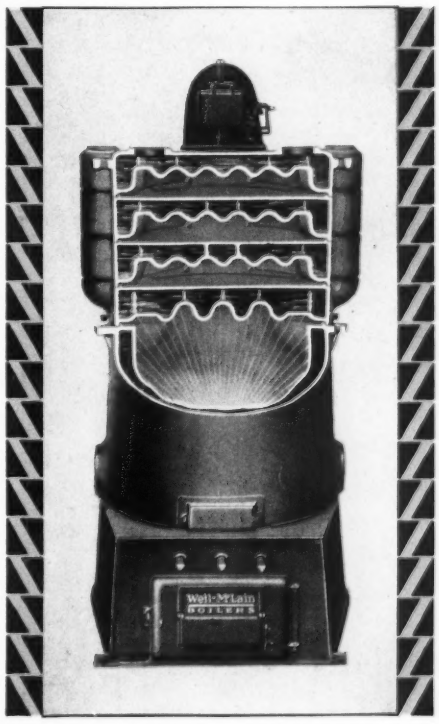
It is easy to show home owners that 30 to 40 per cent more vital heating surface thus added to Weil-McLain Round Boilers enables them to heat their homes with less fuel.

Balanced back-and-forth fire travel

More heat is actually utilized in Weil-McLain Boilers because Weil-McLain fire travel is not only back and forth but it is balanced. Variations in the rate at which boilers operate due to varying heat demands do not alter the long, balanced back-and-forth flow of gases through the flues.

In the complete line of Weil-McLain Boilers you will find many other features—scientific principles of design that enable these boilers to fight fuel waste and deliver more heat. The line includes Round Type, Jacketed, Square, Self-feed and Smokeless Boilers. Also Weil-McLain "Cameo" Radiators.

WEIL-McLAIN COMPANY, General Office: Chicago
Boiler Plant and Offices: Michigan City, Ind.
Radiator Plant and Offices: Erie, Pa.



Jobbing distributors with local stocks in most jobbing centers

Weil-McLain
SCIENTIFIC COMBUSTION
BOILERS
fight fuel waste and deliver more heat

© 1930, W-McL.

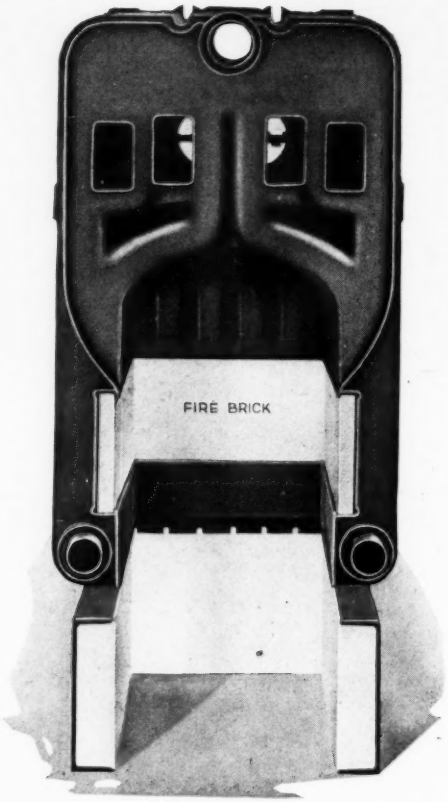
EFFICIENCY FEATURES

Make Sales Easy

for the

NEW SMITH "16"

For an oil or gas burner, a more efficient boiler is needed than when coal is the fuel. Oil and gas, because of more perfect combustion, give off more heat units per minute than coal. The boiler has to absorb heat more rapidly or else allow it to escape up the chimney. This extra efficiency has been built into the New Smith "16".



SMITH "16"
Sales Features

The New Smith "16" has everything that makes for easy selling and satisfied customers

Abundant Fuel Space

Extra Large Combustion Space

Fire Brick Lined Fire Pot

Auxiliary Air Supply

Fire Surface Galore

Especially Adapted for Gas and Oil

Air-Cell Insulation for Jacketed Boilers

Especially Adapted for Oil or Gas Burner

The part of a boiler that absorbs heat is the Fire Surface, and the total amount of heat it can absorb per minute depends upon its area.

The Smith "16" has more fire surface area than in any other boiler of equal grate area—enough to absorb more heat than will ever be needed in any house in which it is installed. It has the extra capacity needed to absorb the total heat units given off per minute from oil or gas, without waste, and can be recommended for these fuels with absolute assurance that it will operate economically in respect to fuel consumption—the true basis of low-cost heating.

For complete information on this efficiency feature of the new Smith "16" together with its other efficiency features such as its firebrick lining and extra large fuel capacity, write for a free copy of our new booklet, "The Smith 16" Address: The H. B. Smith Co., Dept. A-69, Westfield, Mass.

THE H·B·SMITH
BOILERS & RADIATORS
Used in fine homes and buildings since 1860

The H. B. Smith Boilers for steam, hot water and vapor heating; radiators; and hot water supply boilers; for every type and size of private homes, office building, factory and public building.

Sales Offices and Warehouses:

NEW YORK 10 East 41st St. | PHILADELPHIA 2209 Chestnut St. | BOSTON 640 Main Street Cambridge | CLEVELAND 1108 Webster Ave. S. E.

WESTFIELD, MASS.

THE CELEBRATED SKIP TOOTH DIE
(Genuine Nye)
REG. U. S. PAT. OFFICE

A Letter from Harry G. Nye

Jan. 11, 1930.

To All Displeased Plumbers and Dissatisfied Steamfitters of the U. S. A.

Friends:

Every Christmas you give away a lot of things you would like yourself, and get in return a lot of others of which you already have two of or don't want any. Christmas presents are often a great waste of paper and string, and something ought to be done about it, to somebody.

Just before Christmas, therefore, I announced that if some plumber or steamfitter received a bulldog for Christmas, when what he wanted was a sofa pillow, or vice versa, or what have you, I would get you fellows together so you could exchange. So here goes:

Boots Little of Crane Company will swap a cigar-lighter that doesn't work for a barrel of grape-juice that will.

Julius Tschopik of Standard Sanitary Mfg. Company would be glad to trade a polkadot necktie for a speckled dog, trout, or even a hen.

Fred Allison of Braman, Dow Company, Boston, Mass., would like to exchange his banker friend's best wishes for some regular money.

J. F. Sheppard of The C. S. Mersick & Company, New Haven, Conn., will trade a stylish hard-bottomed parlor chair for a ringside seat anywhere.

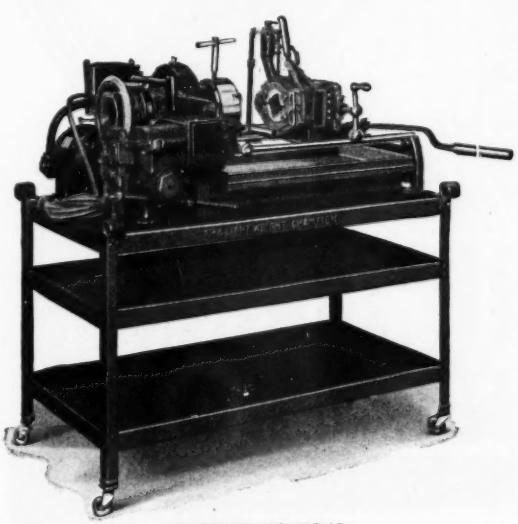
G. H. Gorton of W. B. Young Supply Company, Kansas City, Mo., will swap some hair-tonic that turned out to be just what it says for some that isn't.

We also have 137 sofa pillows awaiting bulldogs, as advertised, and a large number of last year calendars sent in by mistake, or some Scotchmen. Our friends also seemed to have received a much larger quantity of bridge-lamps than they have any use for.

In spite of our request that they only write, three fellows have sent in stiff shirts. They are being held for storage charges. Quite a number of others have sent in orders, which we have been glad to exchange for the best pipe tools on earth.

Yours for service,

Harry G. Nye



PATENTS PENDING

THE LIGHTWEIGHT CHAMPION

Threads—Cuts Off and Reams

Capacity ⅛ to 2 Inches

OTHERWISE KNOWN AS

THE NYE TOOL & MACHINE WORKS

4120-30 Fullerton Avenue :: Chicago, Ill.

Copyright 1930 by Harry G. Nye
All rights reserved

THE CELEBRATED SKIP TOOTH DIE
(Genuine Nye)
REG. U. S. PAT. OFFICE

WE see lasting beauty—we sense permanent shelter in the outward walls of modern skyscraping business homes. But a hidden structure of equal importance, and even more necessary to activity within these walls, is the network of durable Republic Steel Pipe that carries the essentials of life throughout the building. Republic Steel Pipe was used for the cold water lines and the heating system in the imposing Buhl Building, Detroit, Michigan.

Buhl Building, Detroit, Michigan
Smith, Hinchman & Grylls—Architects
Lorne Plumbing & Heating Co.
—Plumbing and Heating Contractors

REPUBLIC STEEL PIPE

REPUBLIC IRON & STEEL CO., YOUNGSTOWN, OHIO

Why Not Sell ? MYERS SELF-OILING POWER PUMPS

A REGISTERED TRADE NAME

The Line With More Sales Opportunities

FIG. 2426

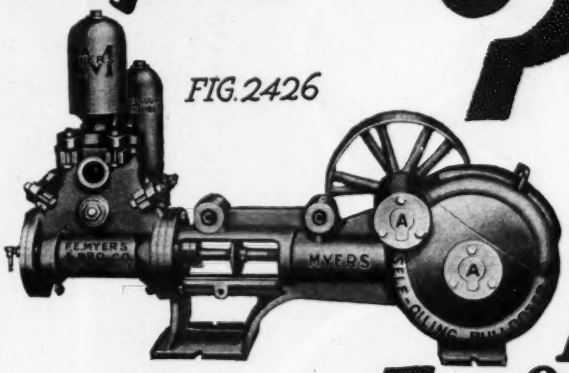


FIG. 2455

FIG. 2527

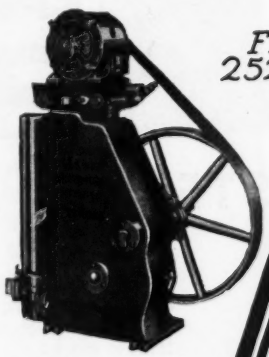


FIG. 2551

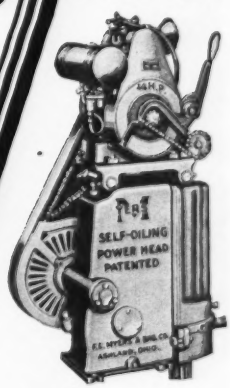
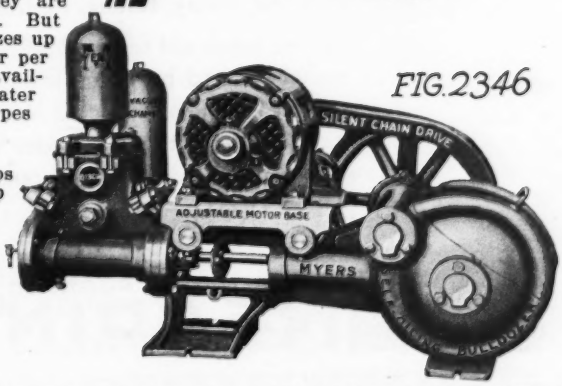


FIG. 2549

FIG. 2346



YOUR power pump business rests on the line of power pumps you have to offer to your trade. Dealers the land over have found it to their advantage to reach out in every direction for more power pump business with Myers Self-Oiling Power Pumps.

A home owner living beyond the web of city water mains may be a live prospect for a water system—a nearby farmer may be looking around for suitable equipment to modernize his home and farm buildings with running water—A centralized school, a rural church, a service station, a creamery or dairy or any one of a hundred other prospects may be ready and waiting for someone to sell them modern water facilities.

Myers Self-Oiling Power Pumps and Water Systems open a broad highway to this business—a highway that is paved with superior quality and protected at every turn with national publicity—a highway with leads in every direction permitting wider sales activities and greater returns than can possibly be obtained with other lines restricted to but a few types.

Shown here are six leading styles. They are popular because they are the sizes in greatest demand. But other styles of equal merit in sizes up to ten thousand gallons of water per hour are equally successful and available for those who use more water than can be supplied by smaller types of pumps.

Stock Myers Self-Oiling Power Pumps and plug the gaps in your power pump business. Write or wire.

THE F.E. MYERS & BRO. CO.
ASHLAND, OHIO.
ASHLAND PUMP AND HAY TOOL WORKS

Take Off Your Hat To The MYERS
PUMPS · WATER SYSTEMS · HAY TOOLS · DOOR HANGERS

PUMPS FOR EVERY PURPOSE - WATER SYSTEMS - HAY TOOLS - DOOR HANGERS

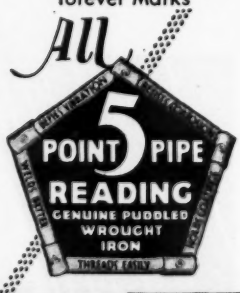
TIME—THAT TOUGH OLD TESTER....

Meet Time, that tough old tester of everything in this world. To his aid, Time calls all the destructive forces of the universe. Years come and go, storms and sunshine, heat and cold make their accustomed rounds, while Time, the tough old tester, broods over the world, trying, testing, destroying.

Yet Time, the tough old tester, does have his troubles. Against one material devised by man, Time and his serving-men falter. That material is genuine Puddled Wrought Iron—the metal of which Reading 5-Point Pipe is made. Watch for the next coming of Time, the tough old tester—you can learn about pipe from him.

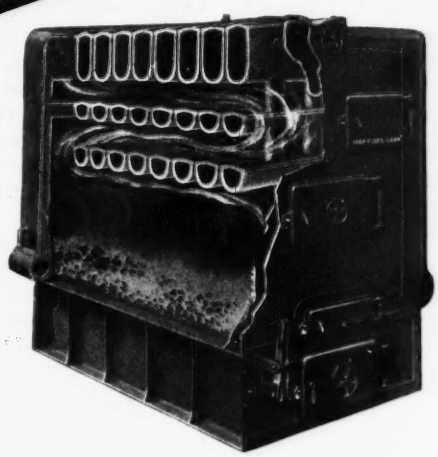
READING IRON COMPANY, Reading, Pennsylvania

For Your Protection, This Indented Spiral Forever Marks All



GENUINE PUDDLED WROUGHT IRON
READING PIPE
DIAMETERS RANGING FROM ⅛ TO 20 INCHES

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Wrought Iron



And There You Have The Secret of Burnham Fuel Thrift

ALL OTHER things being equal. A Burnham extra length of fire travel will mean more heat for less fuel every time.

That's just common sense.

Just see how it loops the loop, from front to back, to front and back again. Three times as long as the boiler itself.

It's their long fire travel that makes the short coal bill.

There's a long fire travel Burnham for every heating purpose. Get the catalogue and see for yourself.

Burnham Boiler Corporation

IRVINGTON, N. Y.

Representatives in all principal cities of the United States and Canada

Permanently Lubricated

for Many Years of Hard Service

The new Ever-Oiled Water System requires less care and attention than an electric fan.

—No oiling is needed. The pump runs on ball bearings that are lubricated for life—packed in grease and sealed against dirt and moisture.

—The packing is kept tight always by a new spring tension gland.

—All leakage around the pump is eliminated by a new water seal overflow.

—All working parts are enclosed.

The operation of this pump is so satisfactory and dependable that we are backing it with a

2-Year Guarantee of Trouble-Free Service

If any defect or trouble develops within that period we will replace the pump.

Never before has such a guarantee been placed on any pump by any manufacturer.

The Ever-Oiled line covers Shallow Well Systems of many types and sizes.

SEND FOR 1930 CATALOGUE

GOULDS PUMPS, Inc,, Seneca Falls, New York

Ever-Oiled System W-40

A low priced shallow well system for direct well service. Capacity 210 gallons per hour. Complete as illustrated with ¼ h. p. 60 cycle motor and V belt drive. All assembled and ready to install.

PRICE

$79.50

F. O. B. Factory and Warehouses.

GOULDS EVER-OILED W-40 WATER SYSTEM

Gauges

PRESSURE AND VACUUM GAUGES
ALL SIZES AND TYPES FOR EVERY PURPOSE

30-lb. U. S. Gauge for House Heaters equipped with independent non-corrosive movement, mounted directly on the socket for accurate indication. Built to meet requirements of A. S. M. E. Boiler Code.

THIS New U. S. Gauge has been specially designed for House Heating Boilers and has an open reading dial that clearly indicates the steam pressure in ounces up to 5 lbs. Due to the economies of volume production it is attractively priced.

Made by the largest manufacturers of industrial gauges—the pioneer in quantity production of a complete line of pressure and vacuum types—U. S. Gauges set the standard for accuracy and dependability in every kind of service.

Gauge users are invited to consult with our engineers on the proper type of gauge for their particular requirements. Inquiries will receive prompt attention and orders prompt delivery.

UNITED STATES GAUGE CO.
44 Beaver Street New York

New BLACK & DECKER HALF-INCH ELECTRIC DRILL

$45 (-ten years ago $110.00)

1920 — $110.00
1922 — $85.00
1924 — $68.00
1926 — $58.00
1928 — $53.00
1930 — $45.00

A TRIUMPH OF QUANTITY PRODUCTION

Black & Decker Electric Drills have constantly increased in value and have just as consistently decreased in price, due to continuous increasing efficiency in manufacturing methods.

Now on sale by the Leading Jobbers

The Black & Decker Mfg. Co.

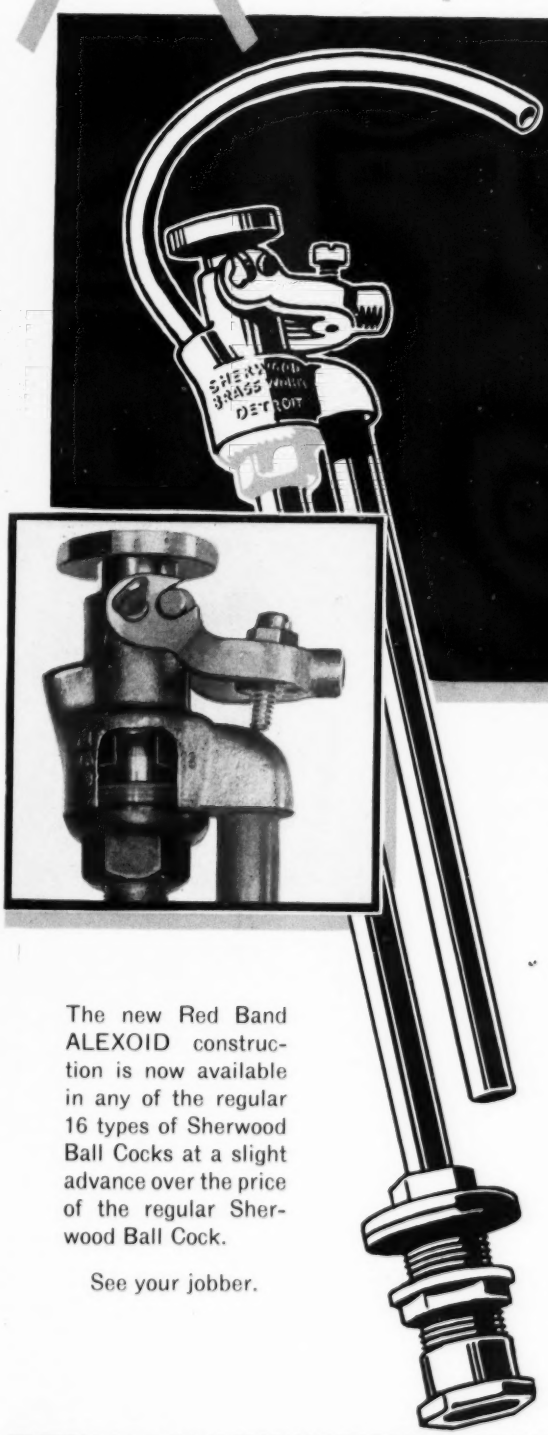
Toronto, Ontario, Canada Towson, Md. U. S. A. Slough, Bucks., England

ANNOUNCING

THE RED BAND BALL COCK

Alexoid RED BAND NON-CORROSIVE

A SHERWOOD Ball Cock



THE makers of Sherwood Ball Cocks have developed a metal for the valve seat of this new addition to the Sherwood line. It reduces to the minimum the problems caused by corrosion.

After a careful study of water conditions in all parts of the country and an analysis of the destructive forces encountered in some localities, Sherwood perfected and applied ALEXOID metal to this new ball cock. This is supplementary to the standard model Sherwood, which is designed for use where water conditions are normal.

If you have destructive waters in your locality, we know you will welcome the Red Band Ball Cock—it is your assurance of every feature of the standard Sherwood, plus the new ALEXOID valve seat which renders it entirely impervious to damages of any water.

The new Red Band ALEXOID construction is now available in any of the regular 16 types of Sherwood Ball Cocks at a slight advance over the price of the regular Sherwood Ball Cock.

See your jobber.

SHERWOOD BRASS WORKS
Jefferson and Mt. Elliott Aves. DETROIT, MICH.

REPRESENTATIVES
J. A. Riordan Co. (Inc.), 1600 E. 7th St., Los Angeles
303 Colman Bldg., Seattle
E. S. Thompson, 2401 Chestnut St., Philadelphia
Fred G. Hoffman, 831 Edgewood Ave., Trenton, N. J.
Fred S. Wilsey, Plymouth Bldg., Minneapolis

THE FITTINGS MATCH THE QUALITY of the Valve itself *on the*

SMITH & WESSON FLUSH VALVE

The fittings for the Smith & Wesson Flush Valve have been carefully chosen to give the same lasting, attention-free service as the valve itself.

For example, the stop at the inlet is a Ground Key Stop. Capped top and bottom, it is positive insurance against leakage. This type of stop provides a full water way and is not used to adjust the flow of water. The full head is allowed to pass into the valve all the time it is in use. The stop is used only when it is desired to shut off the water supply to the valve.

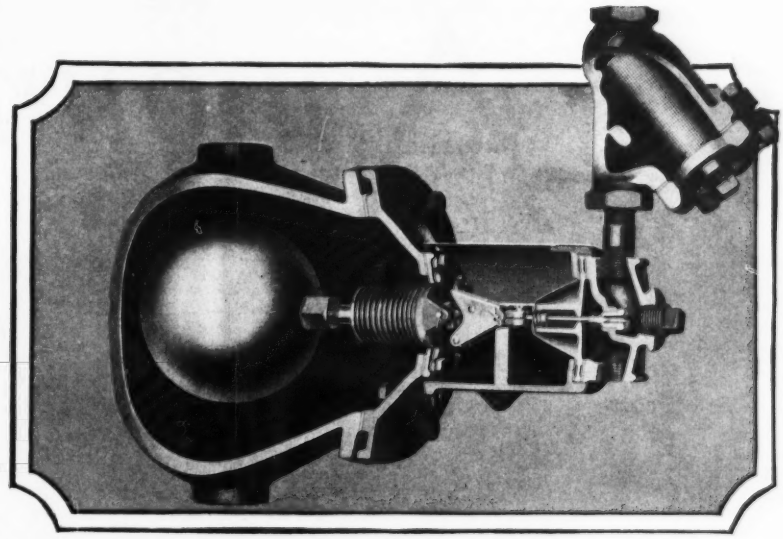
A thorough study of flush valve requirements has enabled Smith & Wesson to anticipate the problems of the purchaser. The choice of quality fittings is one of many ways in which the need for attention after installation has been eliminated.

For Further Information Write

SMITH & WESSON

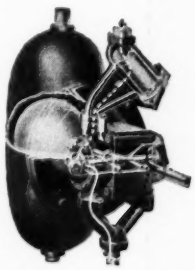
FLUSH VALVE DIVISION

SPRINGFIELD, MASSACHUSETTS



A NEW *feeder—a new opportunity*

Take full advantage of the vast market it opens up!



for Medium & Large Boilers

The McDonnell & Miller No. 28

Self-Cleaning Duplex Feeder. The Feeder that set the standard of duplex feeder quality.

for Process Boilers

The McDonnell & Miller No. 29 Single Valve Feeder

The ideal feeder for all boilers where condensation is not returned or where boilers are operated continually under a vacuum.

THE throttle of feeder sales has been thrown wide open by this new McDonnell No. 30 Safety Feeder. For the first time, you are given a feeder of true McDonnell & Miller quality that can be sold at a price in line with the smallest job!

Think what that means. It makes the sale of a feeder possible for every steam, vapor or vacuum heating system old or new. It gives you a feeder for every oil-burner job down to the smallest—and remember that a boiler feeder is the only logical protection for oil-burner installations.

The low price of this feeder is purely a result of simplicity of design. In the entire feeder there is not a single sacrifice of quality. This is brought out in the illustration. Note that the five-inch seamless float actuates the valve through a genuine **sylphon** bellows which takes the place of a stuffing box and definitely eliminates both leakage and friction. Valve is stainless steel and is totally isolated from the heat—a feature which stops scale formation and does away with sticking and binding. The only packing used is in the stuffing box of the feeder valve, and this is automatically held tight.

Rounding out the line of McDonnell & Miller Feeders, briefly described opposite, this new feeder is already making profits for hundreds of contractors. Send coupon below for a new bulletin fully describing the feeder and its service range. Also let us tell you all about McDonnell & Miller sales and merchandising aids.

McDONNELL & MILLER

400 N. Michigan Avenue Chicago, Illinois

Eastern Office: Grand Central Terminal, New York, N.Y.

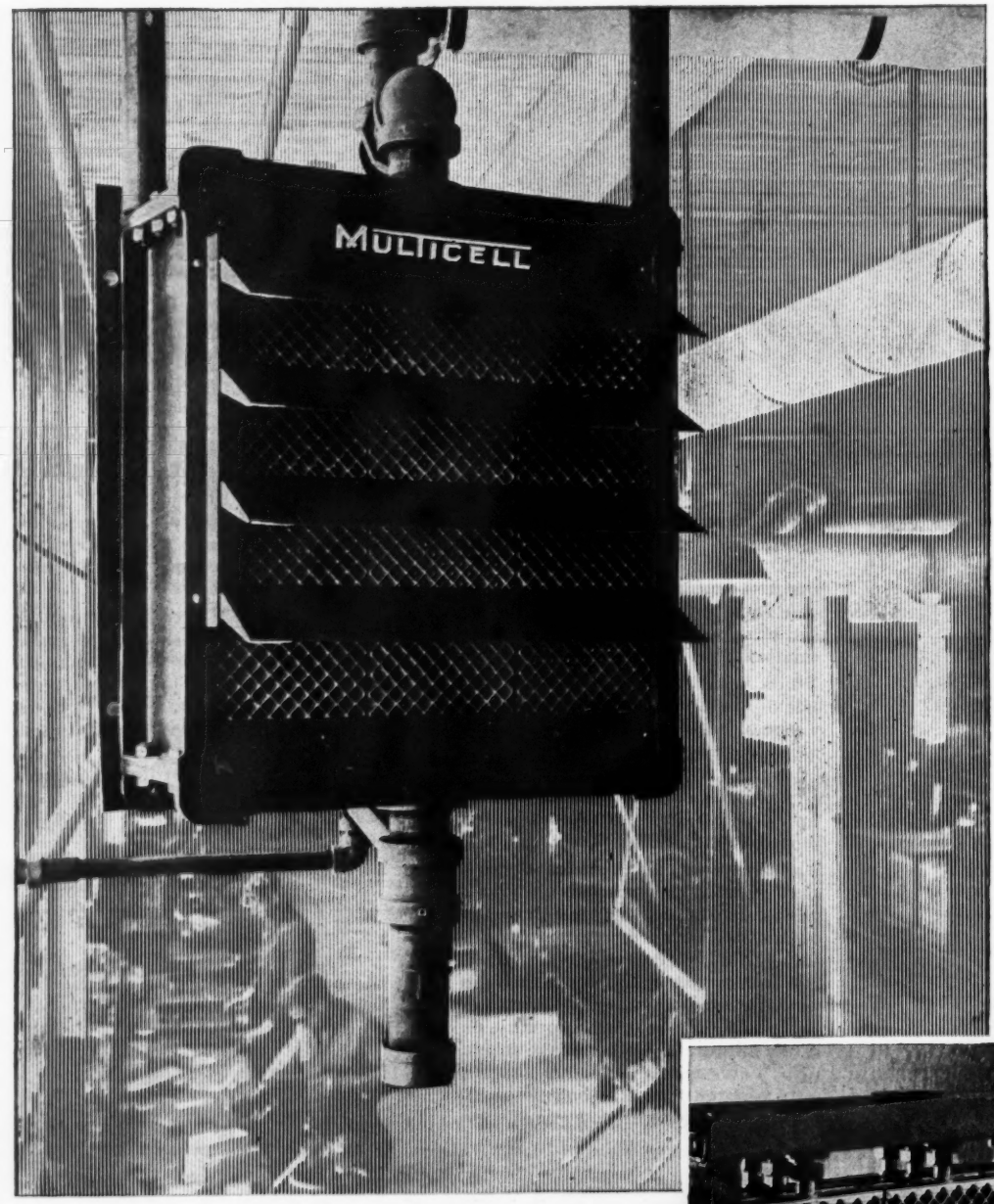
McDONNELL & MILLER
400 N. Michigan Avenue, Chicago
Please send bulletin describing the new No. 30 Feeder.
Business .....
Individual .....
Street and No. .....
City and State .....

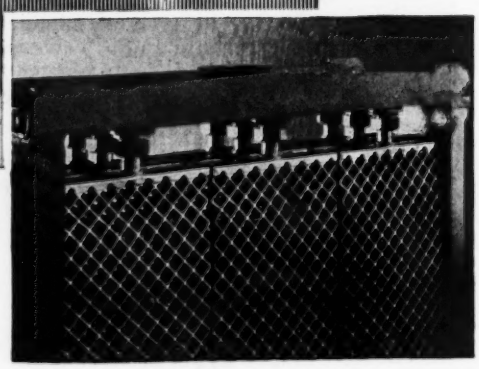
See our exhibit at Booth 706, International Heating and Ventilating Exposition, Philadelphia, January 27 to 31, inclusive

McDONNELL & MILLER *Boiler Feeders*

"Doing one thing well"

Announcing





Above: Illustrating the simplicity of Multicell installation.

Right: Showing rigid frame to take all piping strains. Flow and return header integral with frame. Elements easily removable.

Opposite Page: Close up of Multicell element cut away to show large steam and waterways. Note division of element for maximum heating surface. Multicell is "Every *Inch* a Heater".

MULTICELL

A NEW AND RADICAL IMPROVEMENT IN UNIT HEATER CONSTRUCTION

HEATING ENGINEERS have long felt that a heating surface using a fan system should be so formed that *all the air* comes into direct contact with *all the heat*. In other words, an element free from the necessity for extended surface. Hitherto, manufacturing limitations have prevented the construction of such an ideal surface.

Now, in Multicell . . . and only in Multicell . . . this requirement of heating engineers is fulfilled.

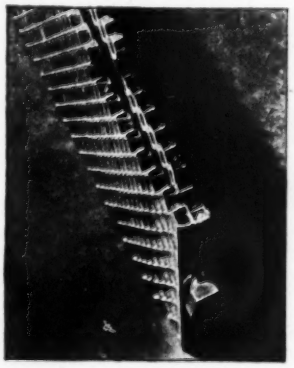
Ordinary methods could not have solved the problem. There is one method only, and that is the result of years of experiment. It is based upon an age-old principle . . . electrical deposition, improved and patented by the Multicell Corporation. This process permits of correct design in the manufacture of one homogeneous seamless piece of copper having ample steam and water ways.

MULTICELL IS THE ONLY UNIT HEATER IN THE WORLD USING ONE-PIECE, SEAMLESS, PURE COPPER HEATING ELEMENTS . . .

THEREFORE, no other unit heater can give you all these Multicell Features:

1. Multicell's 100% prime heating surface of uniform metal thickness.
2. Multicell's accordion-like contraction and expansion of sections.
3. Multicell has no slip joints or diaphragms.
4. Multicell is leak proof.
5. Multicell has no fins . . . dust free and self-cleaning.
6. Multicell's rigid frame takes all strains away from elements.
7. Multicell's flow and return header integral with frame.
8. Multicell elements easily removable.
9. Multicell is extremely lightweight for convenient installation.
10. Multicell has unequalled area of steam and water ways, in similar space.
11. Multicell gives maximum heat transfer per unit of area, weight and resistance.

Multicell will be shown at the International Heating and Ventilating Exposition, Philadelphia, January 27th to 31st. See it at Space No. 661. Complete units and cut away sections demonstrate the features of this real advancement in Unit Heater Design. If unable to attend the exhibit, write for cut away sample showing Multicell construction. Just mail the coupon.



MULTICELL RADIATOR CORPORATION

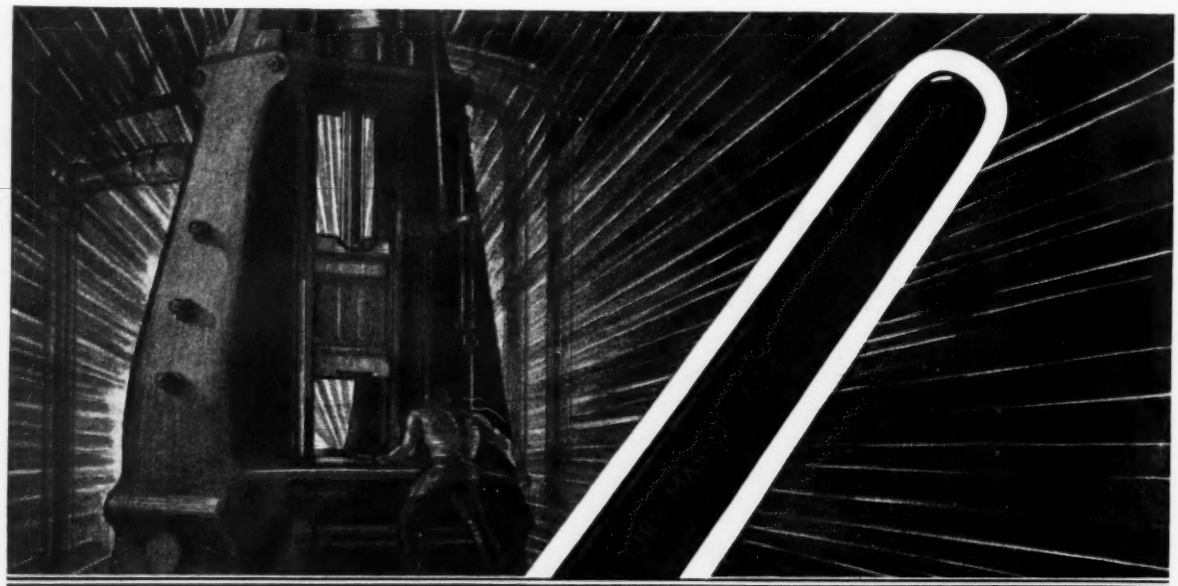
Liberty Bank Bldg. **Buffalo, New York**

MULTICELL RADIATOR CORP.
1713 Liberty Bank Bldg.,
Buffalo, N. Y.

You may send me a sample cut away section of the Multicell Unit Heater.

*Name*_____

*Address*_____



Drop Forged---*Not Cast*

-----another reason why TRIMO is an exceptionally good pipe wrench

When pipe wrenches are up for consideration, remember this about the all steel TRIMO wrench: The handle is drop forged, not a casting.

It would be a little easier to make the handle of cast iron — but it would be a little easier to break that handle if we did.

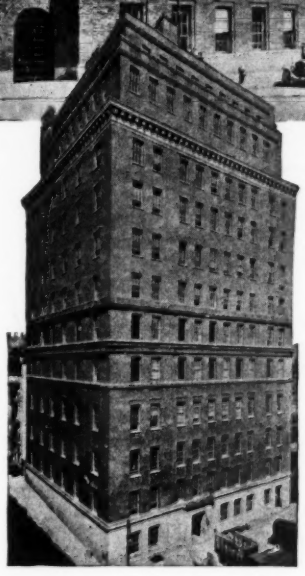
No pains are spared in making TRIMO the strongest and safest wrench of its kind. Drop forging the handle is simply one of many reasons why a TRIMO can give you extra service and extra strength.

TRIMO

TRIMO
Pipe Wrench

Made by **Trimont Mfg. Co., Inc.,** Roxbury (Boston), Mass.

Basement Equipment for Type "R" Systems of 16,000 to 32,000 sq. ft., e. d. r. consisting of Duplex Vent Trap two size 323 Boiler Return Traps—used in many large telephone exchange buildings.



"Telephone Town" uses many Type "R" Systems

Scores of telephone buildings, offices and exchanges are equipped with Webster Systems of Steam Heating. The few shown here, located in three cities, are typical examples of the outstanding telephone buildings in scores of cities, heated by Webster Vacuum Systems or Webster Type "R" Systems—the choice of system being dependent on the particular conditions involved. For branch exchange buildings the Webster Type "R" System is particularly desirable because of its simplicity and ease of operation.

A telephone exchange requires heat twenty-four hours a day during the winter months. Well maintained telephone service must have heating that is adequate, uniform and unfailing. Only when thoroughly warm and comfortable can operators work with swiftness and accuracy.

Follow the lead of contractors who have made a success of telephone company business. Submit your bid on the basis of a Webster Type "R" System. You will find telephone executives receptive to such quality ideas as are expressed by Type "R" installations.

The Webster Steam Heating Specialist in your vicinity can no doubt help you in developing preferred business—with more profit, more satisfaction and more pride in it for you. It is suggested that you get in touch with him.

-since 1888 Webster Systems of Steam Heating

The Webster Steam Heating Specialist in your vicinity can probably help you in developing PREFERRED *business with Webster Type "R" Systems. Get in touch with him.*

WARREN WEBSTER & COMPANY

Pioneers of the Vacuum System of Steam Heating

CAMDEN, NEW JERSEY

Branches in 52 principal U. S. Cities. In Canada—Darling Bros., Ltd., Montreal

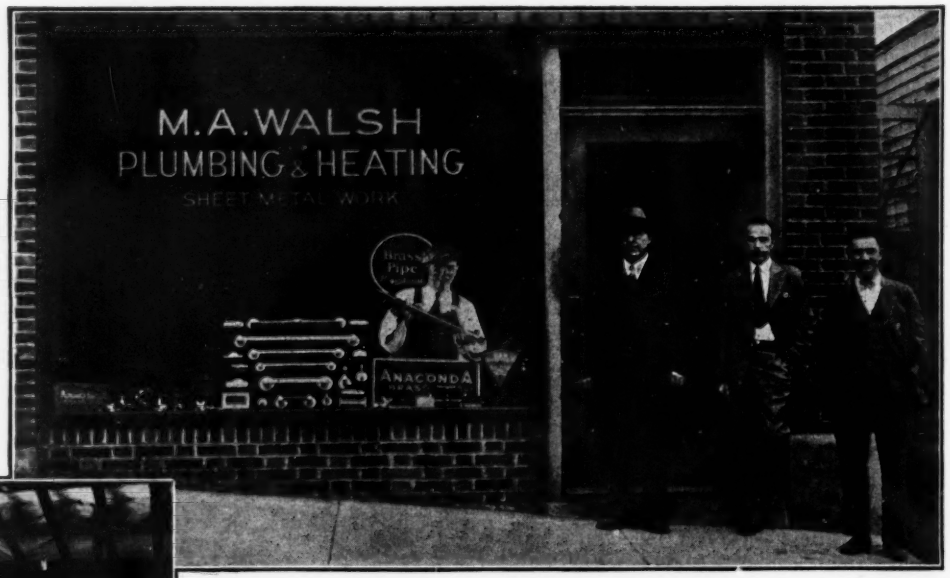
a R 18 HC

WARREN WEBSTER & COMPANY, Camden, New Jersey.

Please mail Bulletin B-600, describing the Webster Type "R" System of Steam Heating to

Name..... Street..... City.....

D. E. 1-30



Here is M. A. Walsh's headquarters. Left to right, M. A. Walsh, W. A. Hagenbuckle and Fred Sacher.

An interesting M. A. Walsh plumbing installation. In this one, as in other installations he has made in Pelham, Anaconda Brass Pipe is used throughout.

"BUSINESS IS GOOD!"

Says M. A. WALSH

"And has been ever since we started specializing on ANACONDA."

IN building up the business of one of the most prosperous plumbing contractors we know, M. A. Walsh of Pelham, N. Y., the exclusive use of Anaconda Brass Pipe has played an important part.

Business has been *so good* with Mr. Walsh that last summer he left the shop, with things running like clock-work, and made an extended tour of Europe with Mrs. Walsh. Read what he says about Anaconda Brass Pipe:

"Business is good, and has been ever since we started specializing on Anaconda Brass Pipe. It has been my experience that people know about Anaconda through its advertising and because I have used it with marked success here in Pelham for many years. Even though it costs somewhat more than rustable pipe, people are willing to pay the added cost for Anaconda. They know that with this pipe we can give them a permanently troubleproof installation."

Anaconda Brass Pipe is manufactured with the highest metallurgical skill by the world's largest and most experienced producers of copper, brass and bronze. Its uniform quality and workability are due to the scrupulous care attending every stage of manufacturing from mine to finished product.

ANACONDA from mine to consumer

Leading plumbing supply houses everywhere stock . . .

Anaconda 67 Brass Pipe for normally corrosive waters.

Anaconda 85 Red-Brass Pipe for highly corrosive waters, and for rigid underground service lines with threaded fittings.

Anaconda Deoxidized Copper Tubes for use with compression fittings for underground service lines.

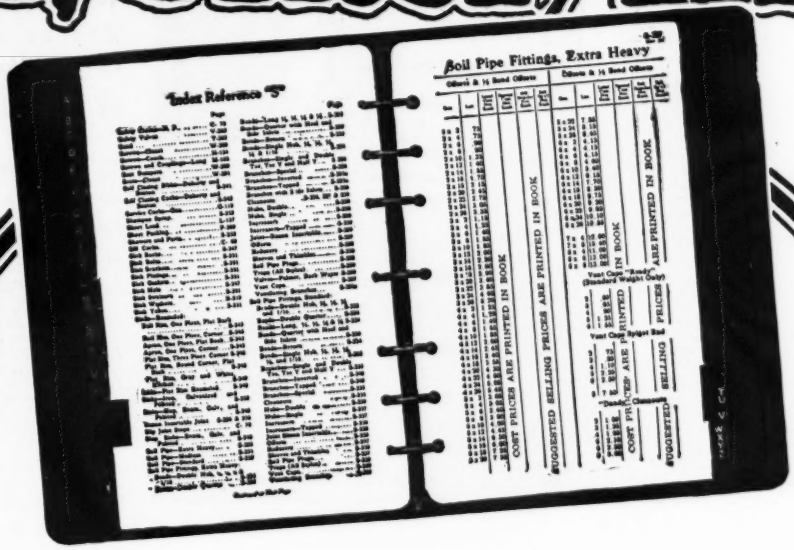
* * *

Our Technical Department will be glad to cooperate with you in determining the nature of your local water supply and recommending the Anaconda Brass Pipe to use.

ANACONDA BRASS PIPE

THE AMERICAN BRASS COMPANY, GENERAL OFFICES, WATERBURY, CONNECTICUT

Inventory Time


Index Reference
Soil Pipe Fittings, Extra Heavy
COST PRICES ARE PRINTED IN BOOK
SUGGESTED SELLING PRICES ARE PRINTED IN BOOK

PROFIT is the basis of every business. The only way in which you can get every penny of profit out of your business, is to watch every penny invested. It is vital that you know definitely the cost of every item you use and what price you should sell it for, to make a legitimate profit.

Think of the money a convenient, accurate record of costs and proper selling prices (all worked out on every size of every kind of material) would make or save for you at inventory time, when you can reduce your stock investment, prevent both over—and underbuying, cut out dead stock and put your business on a profit making basis.

The Price Guide solves the cost and selling price problem—it is convenient, reliable, and practical. We are continually adding new items to the Price Guide. Our Revision Service keeps the owner of the guide posted at all times regarding current prices.

Mail the coupon, it will bring you information worth while

Bareham & Saunders

Publishers of the
PLUMBERS' AND STEAMFITTERS' PRICE GUIDE
Published and used by Plumbers and Steamfitters since 1912

366 East Main Street **ROCHESTER, NEW YORK**

D. E. 1-11-30

Please send me full information regarding your Price Guide.

Name .....

Street .....

City .....

State .....

JOSEPH
WARREN
REVERE
Son and Partner
of Paul Revere

"The company which has today grown out of the Revere beginnings operates 25% of the country's copper, brass and bronze rolling-mill facilities. It has also developed new-day methods such as Rome's continuous rolling-mill, completed 1929."

THE *Son* OF

Paul Revere

began the chain of consolidation

It began in 1828,—this chain of historic consolidations which has resulted today in Revere Copper and Brass Incorporated. In that year, Joseph Warren Revere merged the business started by his illustrious father with James Davis and Son, brass founders, to form Revere Copper Company. The merger came ten years after the death of Paul Revere, he of the midnight ride, founder of the American copper industry.

In 1900, Revere Copper Company merged with its two rivals of many generations to form Taunton-New Bedford Copper Company.

During all this same century, the same consolidating process was going on in Baltimore. Gunpowder Copper Works, started 1814, became Baltimore Copper Company.

Meanwhile, Jonathan Haselton established at Rome, New York, the first brass mill west of the Hudson. Detroit's automobiles gave rise to Michigan Copper & Brass Company, and Higgins Brass & Manufacturing Company. Dallas Brass & Copper Company developed in Chicago as servant to high-specialization industries.

In 1928, another consolidation, as far-flung as modern-day industrial alignments. All these units came together, under the name of their own pioneer, REVERE COPPER AND BRASS INCORPORATED.

Revere Copper *and* Brass

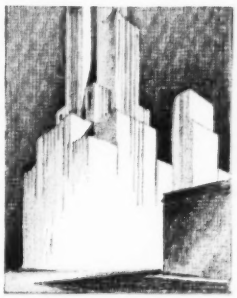
INCORPORATED

Divisions: **Baltimore** *Copper Mills, Baltimore, Md.* . . **Dallas** *Brass & Copper Co., Chicago, Ill.* . . **Higgins** *Brass & Manufacturing Co., Detroit, Mich.* . . **Michigan** *Copper & Brass Co., Detroit, Mich.* . . . **Rome** *Brass & Copper Co., Rome, N. Y.* . . . **Taunton-New Bedford** *Copper Co., Taunton, Mass.*

GENERAL OFFICES: ROME, N. Y.

Sylphon

Leadership
AND THE NEW YEAR



From a seemingly fantastic idea, in twenty-five years to the world's largest exclusive manufacturers of thermostatic instruments may seem "luck" to some people—but to us it represents only the accumulated effort of right thinking and concentrated application.

At this time of general retrospection; of mental stock-taking in all industries—does the progress of your company show the steady growth that you had hoped and expected, or are you barely holding your own, with each year's profits just about the same as last?

We are proud as we look back and view our past, at the beginning of this New Year. Not in the spirit of boasting, but rather of serving. The road hasn't always been smooth for one of the hardest things to do is to help others to help themselves. Why you can sell "gold bricks" when you can't sell "gold dollars"—is an idiosyncrasy of human nature that is as hard to understand as to explain.

We are not efficiency experts, nor is our famous Sylphon Bellows—the most durable, flexible and sensitive expansion unit known—a panacea for all "ills"; but we do know that Sylphon Temperature Regulators will end all your temperature control troubles during the years to come—and that they will help to place your plant in line with other industries for greater growth, efficiency and profit.

Write for Bulletins D 125 and D 175

> > >

The above bulletins are enlightening and will be sent you without obligation.

< < <

FULTON SYLPHON CO.
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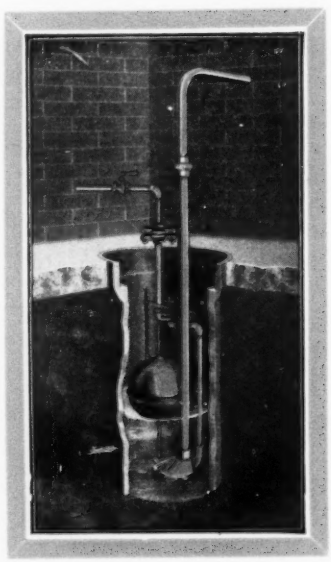

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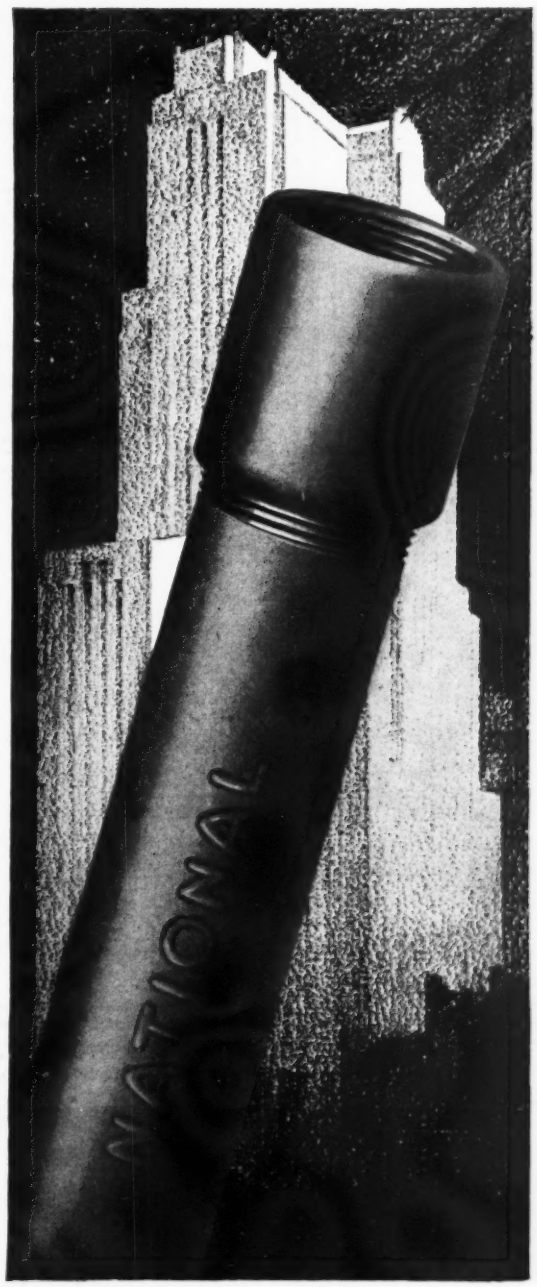

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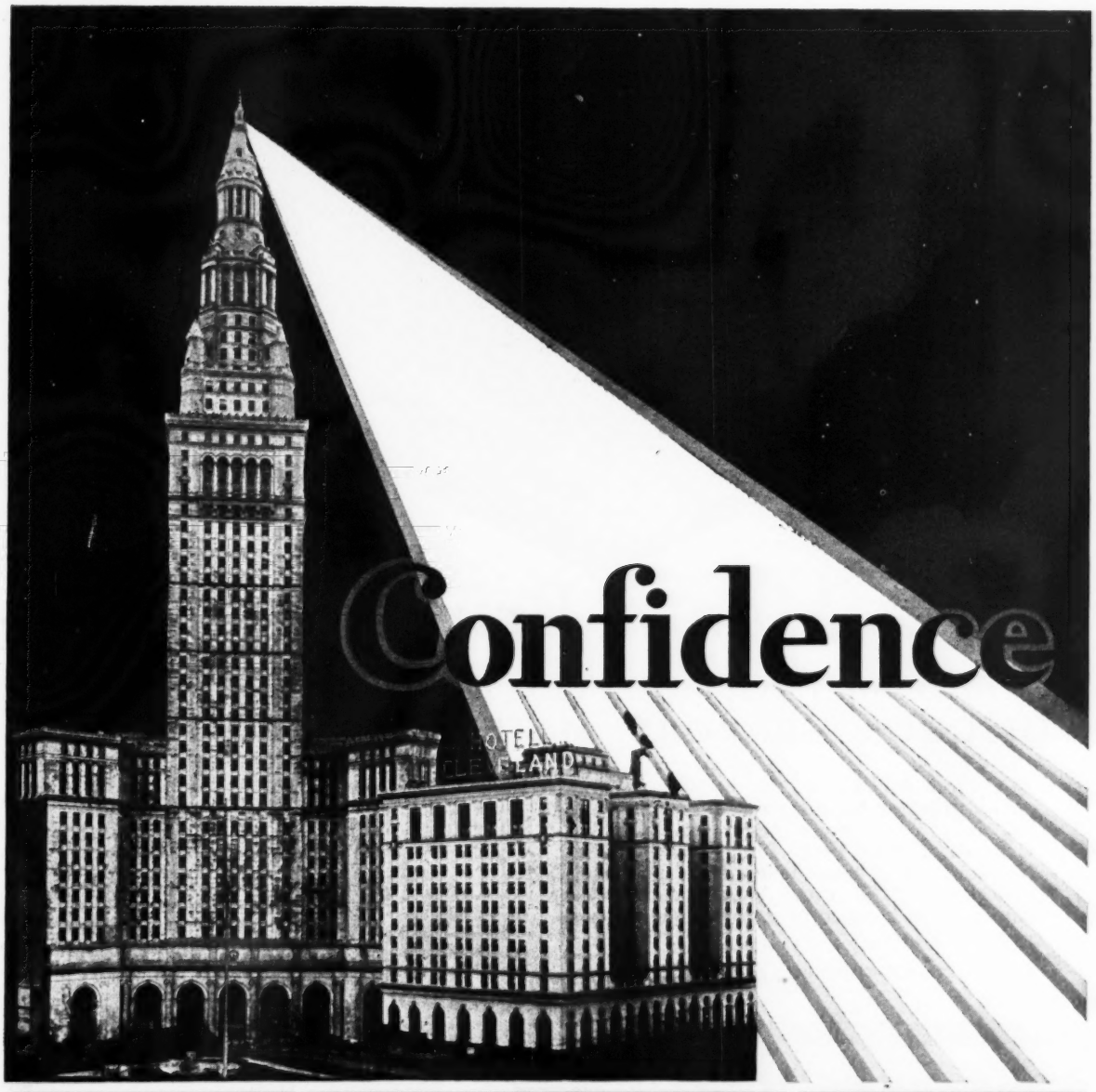

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DOMESTIC ENGINEERING
Plumbing & Heating Contracting and Merchandising

Vol. 130, No. 1
Whole No. 1908

Chicago, Illinois
January 11, 1930

OBSERVATIONS

Will Six Billion Be Sufficient?

THERE are those who feel that each new year should open with a promise of new high levels in business—who feel that somehow the "tumult and the shouting" with which the new year is hailed socially at the moment of twelve o'clock should be carried over into business thought. The logic seems to be that all the industry needs is another billion or two added to the building totals to permit the cutting of a fat profit melon all the way around.

The unfortunate thing about such optimism is that, while it may lend a glow to the opening days of the new year, it has a way of evaporating. It has even evaporated in the face of actual increases in building totals during years just recently past.

We do not think it necessary to put on rose-colored spectacles in order to find all the ground necessary for a conservative optimism, not likely to be dissipated as the first months of the year roll by.

First, as to volume. It is estimated that the total construction volume for 1929 will be between five and a half and six billion dollars. According to all authorities, 1930 will be at least a little better than 1929. One authoritative source quotes eight billion dollars as the 1930 program for all types of construction.

But let us discard this figure of eight billions. There was a time when a six billion dollar building year was hailed by the industry as an opportunity ample for all. Is it not sufficient now? When every factor is taken into consideration, when every advantage which has accrued to business in general, and to our own industry in particular, is considered, it would appear that the industry's share of a six billion dollar program is quite sufficient to supply the profits for which, it is presumed, every business is conducted.

What are the favorable factors enjoyed by business in general? On the front cover of this issue there are three charts. The first two charts contain a significant comparison of two periods in our economic life marked by sharp falls in stock prices. They reveal the significant difference between the two periods. Back in what we called the period of adjustment after the war when stock prices crashed, they brought commodity prices down with them. Tremendous sums were lost on inventories which had to be sold for prices which did not approach what had been paid for them. The reason for this situation was that commodity prices were inflated at that time, as well as stock prices. Hence the disturbance to the stock market brought the commodity prices tumbling down.

That is not true of the stock market break in October of last year. The inflation of stock prices was not accompanied by an inflation of commodity prices during the eighteen months or two years during which stocks were climbing to unheard-of price levels. Hence, when the prices of stocks broke, there was no adjustment of commodity prices necessary. It will be noted from the second chart that commodity prices held, and they still hold, a firm line.

The inference is obvious. The market inflation was speculative; the market break was the result of speculative operations. Meanwhile business had gone efficiently about the task of producing goods and no attempt was made to make fortunes out of rash manipulations of commodity prices. Business was, and is, fundamentally sound.

The third chart shows an advantage at once in favor of business in general, and of our industry in particular. While stock speculation raged, there were complaints about the amount of money being used to finance such operations. Brokers' loans mounted to dizzy heights—almost to the seven billion dollar mark just before the market broke. At latest reports, these loans amount to only a little more than three billions. The withdrawal of over three billions from stock market operations leaves that sum free in the hands of lending agencies to finance business and building operations, a fact which will make itself felt in our industry during the coming year. Money is already seeking more normal employment in business.

Further advantages are outlined in the article, "What of 1930?" in this issue. Here will be found the conservative opinions of men whose outlook is national and tempered by responsibility for great undertakings. Such optimism as these opinions arouse will suffer no shock of disillusion as 1930 grows older. They are too well grounded in the idea expressed earlier in this editorial: that business will remain at such levels as will offer ample opportunity to any properly conducted business establishment.

What of 1930?

Sufficient Building Volume Is Assured to Bring Ample Profits to the Plumbing and Heating Industry

CURRENT financial comment shows a general understanding that the new year will be helped by a release of funds for investment rather than speculation. Money which has been directed into excessive stock market speculation in the expectancy of magic riches, will now be applied to real estate mortgage bonds and general building construction investments. Naturally, this means a greater amount of construction, including modernization and rehabilitation, and consequently is of direct value to the plumbing and heating industry.

To analyze the trend in construction and business generally, it is first necessary to secure the essential facts concerning money and credit conditions. The money situation which had been, for the seventeen months prior

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"An $8,000,000,000 program of building from architectual plans during 1930 is not an unreasonable expectation."—American Institute of Steel Construction, Inc.

to November, increasingly unfavorable to construction activity has completely reversed itself and is now wholly favorable to a renewal of building and engineering work. Cheaper money, resulting from the release of great sums loaned for market operations, will admittedly accelerate the lagging building industry.

In any case, the outlook for 1930 is distinctly favorable—that fact alone is sufficient for the plumbing and heating industry to face the new year confidently. It is not important to speculate as to whether 1930 will be as good as 1929 or 1928. It promises a good volume of building, enough to permit generous profits to be made. What more can the country ask for?

The year 1930 will be better to our industry because of what American business has learned in 1929. While volume in the past years has been large, 1930 can be made more profitable to the country regardless of volume

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"The year 1930 means, in my opinion, the beginning of a period of increased construction activity. Naturally, this upward trend will not arrive simultaneously with the new year, but with the forces now at work, this building revival is not far distant."—Nicholas Roberts, president of S. W. Straus & Co.

if the past experience is invested in the future, and if business men think more seriously about the problems of present profits and stability in the years to come.

All economic minds are agreed that President Hoover's nation-wide effort to aid business in 1930 will prove signally helpful. The fact that the majority of important business organizations have submitted budgets showing intended expenditures of from ten to twenty per cent increase over 1929 budgets is of real significance. But this increase should be viewed by the building industry

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"I see nothing in the situation that should cause us to hold up any of our construction plans for 1930."—M. S. Sloan, president of the New York Edison Co.

not as its salvation but as an added assurance to profits which 1930 otherwise could still be made to produce.

With all industrial, commercial and financial forces of the country marshalling their resources to go ahead on a program of activity as great, and, according to many estimates, greater than any we have had in the past, the country as a whole is certain of ample construction activity. This program is not an artificial emergency invention. It is a normal, well-thought-out advance of each unit in its own field. It is new only in the fact of its concerted momentum.

In assembling facts indicative of what the plumbing and heating industry may expect for 1930, DOMESTIC

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"The goal set by the National Building Industries for 1930 is $2,000,000,000 worth of Modernizing, and if the Modernizing idea is given widespread publicity during the coming year, it is entirely within the bounds of reason to believe the goal of new business which has been set will be reached."—H. S. Sackett, Home Modernizing Bureau.

ENGINEERING believes the results show that the seventeen months' damming up of construction activity has created an accumulated demand for many types of buildings; that there is a wide distribution of money among the people of the United States; that, in many cases, taxes on unimproved property make it advisable to build; that money conditions are highly satisfactory; and that additional building work, beyond the normal expectancy, is not really necessary to the prosperity of our industry during 1930. The stock market collapse, in any event, constituted the final adjustment required for improved building conditions. President Hoover's conference largely served to make public existing construction plans and to stimulate additional building programs for an already good year.

Whatever temporary business reaction may be witnessed, the essential factors underlying our economic stability remain. These factors can not be expressed

solely, or even mainly, in terms of industrial output or trade volumes. The most significant of them all is one that we have no means of measuring statistically. Nevertheless, it is clearly indicated in numerous ways. It is that the income of the people of the United States not only is larger than ever before, but is more widely distributed.

On the most conservative of estimates, the country is assured a six billion dollar year in construction in 1930, while some estimates call for more than eight billion. Therefore, with as much construction planned and comfortably assured as in previous years, all pessimistic forebodings seem groundless.

On the other hand, it is not advisable to be too

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"The total value of building construction in 1930 probably will not differ from that of 1929 by more than 5 per cent."—Col. Leonard P. Ayres, vice president of the Cleveland Trust Co., and noted economist.

sanguine in such expectancy, for an analysis of the prospects in the building industry brings in the time factor. While all such factors point toward a satisfactory outlook, this by no means implies promptly a period of increased construction activity. But that there will be a persistent betterment, accumulating as the year rolls along, all authorities seem to agree. And it is evident

ENTIRE UNITED STATES

General Class	Year 1930 (Tentative Estimates)
Commercial	$ 975,000,000
Industrial	650,000,000
Educational	433,000,000
Hospitals and Institutions	163,000,000
Public Buildings	108,000,000
Religious and Memorial	130,000,000
Social and Recreational	195,000,000
TOTAL NON-RESIDENTIAL	2,654,000,000
RESIDENTIAL	2,654,000,000
TOTAL BUILDING (Projects of $5,000 and up)	5,308,000,000
Public Works and Utilities	1,517,000,000
TOTAL CONSTRUCTION ($5,000 and up)	6,825,000,000
Add: Estimated New Buildings Under $5,000 each	860,000,000
Estimated Remodeling and Alterations	750,000,000
ESTIMATED TOTALS FOR ALL CLASSES	$8,435,000,000

that construction totals will offer ample profitable opportunities to the industry.

The fact that there has been a slowing up of building activities in recent months means that a demand for space has been accumulating to a certain extent, while any preceding slack, at the same time, has been taken up. The demand for buildings, no matter what other conditions may be, must keep pace with the increase in population, as well as the continual processes of obsolescence of all types of structures, which provides another outlet for plumbing and heating commodities.

"The fact is," according to Col. W. A. Starrett, president of the Starrett Corp., "that in many divisions of building the country is very much underbuilt. Underbuilt, that is, in the sense of what constitutes the best

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"Residential building, which declined most heavily in 1929, should increase appreciably in 1930. Public works and utilities should increase, if the market for municipal bonds continues to improve; this class of work has not kept up with the demand. On the whole, it seems likely that the construction program, once it starts to improve, will strike a better balance between various classes of building and engineering work than has been possible during the past year."—Thomas S. Holden, vice president of the F. W. Dodge Corporation.

and most economical development of a given urban land area.

"In recent years, there has been a large total of new hotel construction, yet the fact remains that in general there is no oversupply of hotels planned and built according to the best present-day standards.

"Land values are high in all our cities and there is a

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"The rebuilding of American cities is going on, and it will go on, at a greater rate of speed than has been the case in the past."—Harry H. Culver, president of the National Association of Real Estate Boards.

heavy burden of taxes upon non-productive property. The pressure to correct these conditions is urgent and continuous, so that it is reasonable to suppose that a large volume of necessary building is just around the corner, awaiting the time when funds are available at reasonable rates of interest."

It is generally conceded that, due to the recent turn in the securities market, a great deal of money in all parts of the country will be released for building pur-

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"We are going ahead with our improvement and expansion program just as we had planned before the market took sick."—Samuel Insull, Commonwealth Edison Co.

poses. Much of this is expected to be diverted into modernization and rehabilitation of existing buildings. The home modernization movements afoot all over the United States will serve to stimulate interest in this type of construction.

A survey of the real estate market made by the National Association of Real Estate Boards, based on reports from 411 member real estate boards in principal cities of the United States and Canada, throws considerable light on the subjects of underbuilding and overbuilding, money available for real estate development and

Survey Date	Cities Reporting	Buildings Reporting	Total Space Square Feet	Vacant Square Feet	Vacant Per Cent
Oct. 1, 1924	23	1,105	67,927,928	6,691,616	9.85
Jan. 1, 1925	23	969	63,214,658	6,574,450	9.69
Apr. 1, 1925	27	1,441	102,385,344	8,887,170	8.26
Oct. 1, 1925	29	1,664	111,121,685	10,205,312	9.18
Jan. 1, 1926	28	1,441	101,415,011	7,773,566	7.66
Apr. 1, 1926	35	1,799	111,863,778	10,059,249	8.46
Oct. 1, 1926	40	1,747	119,163,372	12,023,529	10.09
Jan. 1, 1927	41	1,739	122,132,373	12,517,506	10.25
Apr. 1, 1927	38	1,738	120,191,327	11,949,737	9.94
Oct. 1, 1927	36	1,476	111,730,525	12,147,902	10.87
Jan. 1, 1928	39	1,681	125,930,142	15,145,629	12.03
May 1, 1928	36	1,550	120,514,419	14,287,150	11.86
Oct. 1, 1928	40	1,704	130,403,075	15,493,178	11.88
Jan. 1, 1929	38	1,630	132,464,785	15,157,988	11.44
May 1, 1929	36	1,568	131,707,408	15,541,953	11.80
Oct. 1, 1929	38	1,676	140,141,074	16,192,510	11.55

The above table shows the general average of vacancy in office buildings reported by various cities over a period of six years and reported by the National Association of Building Owners and Managers.

rentals for apartment buildings and business properties, and indicates that there is a far more pronounced demand for residental than business structures in most all of the cities reported upon.

In single family dwellings, 19 per cent of the cities reported an actual shortage, and 27 per cent reported a shortage of apartments, but in business properties only 10 per cent reported a shortage.

Concerning the supply of money available for real estate mortgage loans, 19 per cent of the cities reported a surplus of capital seeking that type of investment, and the figure is now even larger, in view of the new cheap money market.

Reviewing the 1930 economic forecast in all possible lights, from an entirely conservative analysis of facts and figures, any one engaged in the plumbing and heating industry can easily satisfy himself that 1930 opens under the influence of factors favorable to the building field. Estimates as to the total volume are unnecessary—the amount assured is sufficient to bring profits to all those who work for them with industry and intelligence.

Five Year Average of Fixture Installation

THE accompanying chart shows the average number of plumbing fixtures installed each month during the past five years in 106 cities of various types and sizes throughout the country. The 1929 average covers only the first ten months of the year, but the figures for the other four years are averages in each case for the entire twelve months. The chart is based upon a survey conducted by DOMESTIC ENGINEERING.

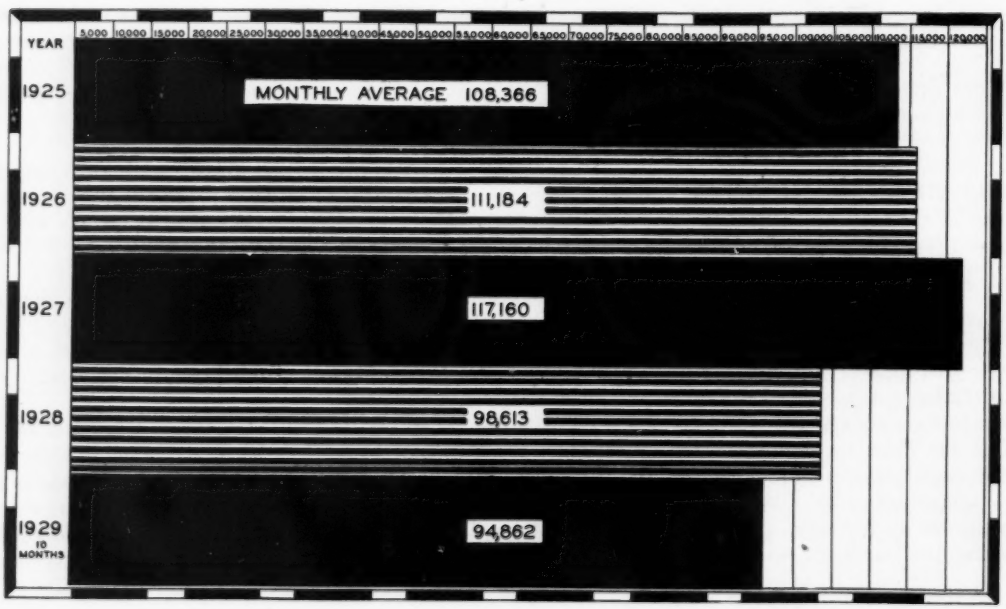
Complete returns for each year were received from 106 of the cities surveyed. The following table shows the total number of plumbing fixtures installed as well as the monthly average for each year:

	Number of Fixtures	Monthly Average
1925	1,300,390	108,366
1926	1,334,210	111,184
1927	1,405,916	117,160
1928	1,183,358	98,613
1929	948,624	94,862

In addition, figures were received from two other large cities for the full four years and eleven months in 1929 instead of the ten months requested. One other large city reported for only five months in 1925, but its figures were complete for the three other full years and for the first ten months of 1929.

Putting these first two cities on a ten month basis for 1929 and estimating the total for the other city for 1925 we have the following totals:

1925—1,577,022 Fixtures.
1926—2,618,402 Fixtures.
1927—1,667,333 Fixtures.
1928—1,393,895 Fixtures.
1929—1,111,316 Fixtures.



The "Great American Illusion"

What it is, and what is being done about it, particularly in our own industry

IN ONE of its bulletins, the Bureau of Domestic Commerce referred to volume as "the great American illusion." Not only in our own industry, but in others, there has been a tendency to regard large volume as the solution of all problems. In the feverish endeavor to create more sales, fundamentals have been overlooked. For it should be obvious that those methods of business which produce no profit where the total business done is one hundred thousand dollars, can hardly be expected to produce a profit on twice that amount of business. The logic of the case would seem to argue that the larger volume would only double the difficulties.

A proper understanding of the problems involved would do much to correct conditions which penalize a man who has invested his capital in a store in a good location, in order that he may display the products of the industry, or the conditions which penalize every one in favor of men who can hardly be claimed to be "in business," they have so little beyond the limitless credit upon which they operate.

Every problem of distribution which we face today is rooted in the modern phenomenon, mass production. The commercial genius of America, exploiting the riches of a new continent, throwing a thin line of pioneers across its breadth in less than two centuries, following them with the railroads, opening farming and mining country with a rush, came to a focus in the problems of manufacturing a sufficient quantity of merchandise to satisfy the needs of a rapidly growing population. Labor-saving machinery and methods developed swiftly; then came the early studies of efficiency engineers, and again the pace of production was quickened. Then came the war with a call for unprecedented production.

All of these things contributed to swell the volume of manufactured goods pouring from American factories every year. At the same time, imports were growing. But as yet no one had made an attempt to study the problems of distribution scientifically, as the problems of production had been studied. Distribution methods developed in hit-or-miss style. First the man with the pack on his back; then the buggies or waggons filled with merchandise; then the first department stores and the first "cross-roads" stores. Then stores of every size and type, specializing in one kind of goods or carrying ten thousand kinds. Then mail-order distribution; and finally the stores founded by mail-order houses.

How many retail stores of any one kind ought to be established in order to supply the country, let us say, with meat, was never studied. But they studied how many machines it would take to turn out a given quantity of goods. So wholesale and retail outlets sprang into being wherever there seemed a market to be satisfied; and the war intensified that development by putting into business men who had made a greater income during the war than before and had been able to accumulate a little capital.

Meanwhile manufactures were increasing; competitive units had to find outlets. So more wholesalers got into business and they, in turn, had to create more retail outlets because competitors were already intrenched in those already existing. Thus the pressure of mass production, felt first by the wholesaler in the distribution scheme, fell upon the shoulders of the retailers. They could not handle every line that was manufactured and some one had to be found who could take on the lines not already being marketed through established outlets.

That, precisely, has been the condition in our own industry. Because the volume of goods was not moving fast enough, the retailer became known as the drag on the economic machine, the "bottle neck," and a lot of other uncomplimentary things. No one thought of his problems, apparently. He had to meet the competition of his fellow craftsmen. He had to meet the competition of hardware stores, of department stores, then of the mail-order houses and now of the local mail-order stores. And as more wholesale houses came into the field, he had to meet (if he could) the competition of the "Man Friday," the man whose whole investment was a kit of tools and who, in effect, worked for the wholesaler. In addition to this, manufacturers and wholesalers came into the picture in competition for the jobs which involved a great many fixtures. The contractor had nothing to figure but labor on such jobs where competition between the larger units had already set the fixture prices.

In summing up these things, let it be understood that here is nothing but an effort to get at the root of things. The villain of the piece, if there is one, is the sum of the economic factors back of America's growth. We have outgrown our distribution wardrobe, that is all. In the panic of that discovery, when manufacturers had to move the merchandise they had made, and wholesalers had to help move that merchandise, credit policies weakened and some of the fundamental facts of the economics of distribution were forgotten.

As American distribution has developed, its basic theory is that locally the retailer must furnish the competitive selling effort. Manufacturers win consumer acceptance through national advertising, dealer acceptance

through business paper advertising, and help the dealer to carry on his work on the "firing line." At first, the wholesaler was considered merely the middle-man. His function was to buy in large quanties and sell in smaller units. Modern theory, however, calls for him to help in the selling effort. Not, however, by creating his own outlets, but by helping to train those already retailing the lines which clear through his warehouses.

Whatever criticism there is to be made concerning present conditions, the weight of it must fall upon the habit which grew up of insisting that the plumbing and heating contractor—the retailer of our industry—was not a John Wanamaker and a Marshall Field rolled into one. For years, the habit of indiscriminately criticizing the retailer went through the industry like a monotonous refrain, repeated over and over. That it has done its share of harm is without question. Products which belong to this industry have sought outlet in other fields, particularly products which, like the oil burner, are of comparatively recent development. Why shouldn't they have done so, hearing so much and so general criticism of the retailer of our industry.

The chase after volume is "the great American illusion" referred to by the writer of this article. The desire for volume was thus characterized by the Bureau of Foreign and Domestic Commerce. This article examines into its causes, and suggests means for its correction

Yet there are those who have convinced themselves that such general criticism must be weak. As the vice-president of one of the manufacturers of appliances sold only through the plumbing contractor said: "We tied up with the plumber. We were satisfied he was a winner. And he has justified our opinion."

The truth of the matter is, like most other truths, much more qualified than one would think from all that has been said in criticism of the plumbing and heating contractors. It is true that there are those in the business who might better be out of it, working for some one else. But that is true of every industry; and the group in our own which is doing its job in workmanlike fashion stands very favorably a comparison with any other retail field which can be mentioned. It is doing the bulk of the work, it represents the bulk of the (profitable) buying power.

All the while the fundamental factors were being overlooked. There are certain steps which should be taken to correct conditions and to build, soundly, a greater volume of plumbing and heating sales. There are indications that these facts have been recognized, as we shall note a little later on.

The first and most pressing problem is that of credit conditions. Every unit in the industry must get a clear view of the necessity for profit on every transaction. Every unit must realize that if a given job can not be had at a fair price, it is injurious to the whole industry to grab it at a profitless price.

Then, in order that terms of sale may be strictly adhered to, those who are carrying impossible amounts in accounts receivable ought to do one of two things: Either write those accounts off as a loss; or take from every debtor some form of evidence of the indebtedness which may be retired in installments, all buying in the meanwhile to be done strictly according to credit terms, and credit to be cut off the moment those terms are overstepped. Amortize the old debts which clutter up the books and give a sense of false value to the business. And, of course, stop giving credit where it is not deserved; stop guaranteeing the jobs of contractors who can not guarantee their own work; stop taking paper from the owner over the head of the contractor. It would be much better to lose the accounts of those who might be offended by the introduction of sound credit policies, rather than to carry such accounts, probably in increasing sums, until the day when bankruptcy proceedings make it necessary to write off a greatly aggravated total of indebtedness.

A special phase of the credit policy which must be studied will have to do with equalizing the buying position of men who have invested their capital in show rooms and in merchandising activities with those who operate without such selling efforts. The one is doing something to keep the products of the industry before his public; the other is not. Yet the first man must include in his estimates a percentage of overhead to take care of his selling expense which the other does not. That this is not equitable is obvious.

The next essential step is to reorganize the selling efforts of the industry as a whole. The experience of every advertiser indicates that he must carry on intensive educational work before he can get down to merchandising his product definitely. We have cited the example of the sheet steel people several times. By intense, educational efforts they have succeeded in widening the application of the products of their field. We need more educational work for our own industry in order that every bearing of its products on health and comfort and convenience is better understood.

There is also a sales management job to be done within the industry. The ideal organization of the selling forces of the industry would make it possible to have a new merchandising plan or idea reach every member of the industry in much the same way as it would in a single selling organization. Manufacturers' salesmen should be so directed as to give real selling help to wholesalers' sales organizations; and these wholesale salesmen, in turn, should be able to offer practical assistance to the retailer. The wholesaler's salesman, or the manufacturer's salesman, who can not take his product into a home and sell it is in no position to instruct others on how the thing is done.

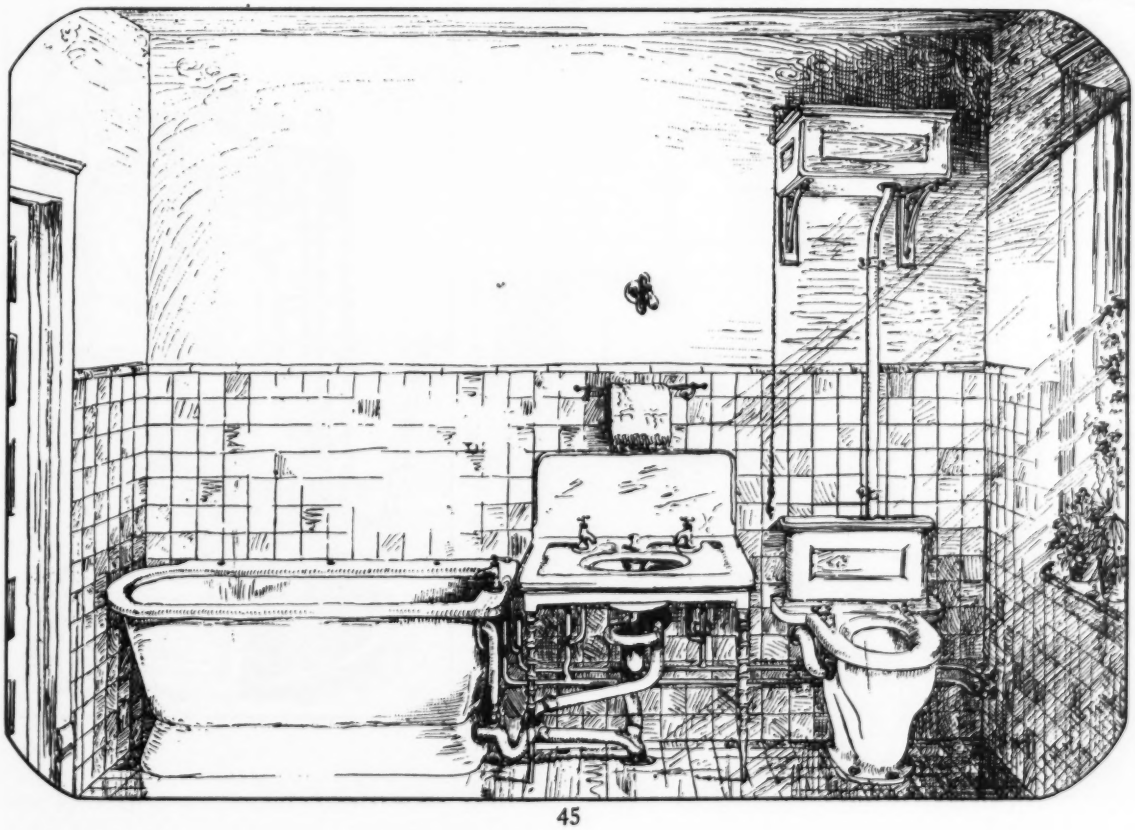
We need, too, to study conditions within the whole building industry. How many men in the industry are aware of the fact that the general contractors have turned their attention to correcting some of the practices of which those in the position of sub-contractors have complained so often? The action last year of a committee of the general contractors, which adopted five rules looking to the betterment of conditions, ought to have been utilized immediately by the whole industry so that men

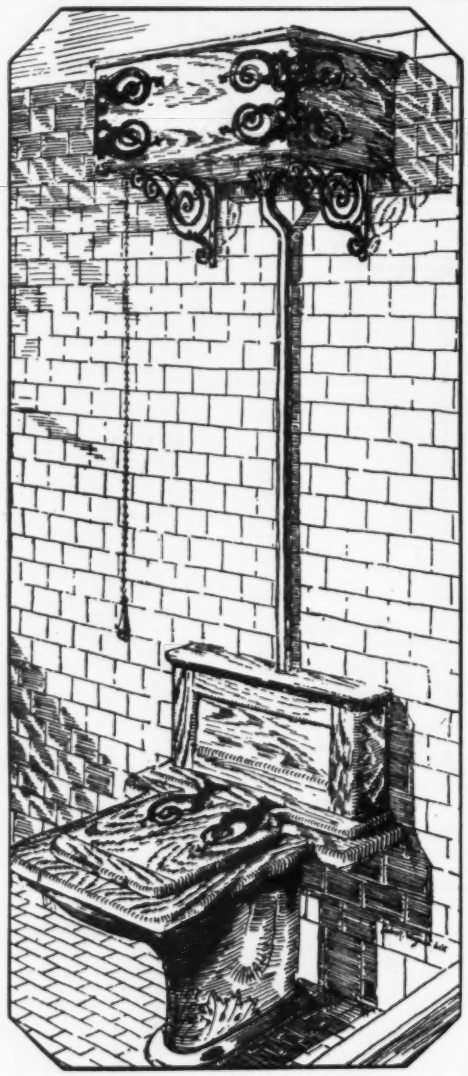
(Continued on Page 142)

Forty Years Ago

DOMESTIC ENGINEERING was first published in 1889 as a thirty page magazine, designed to serve the needs of the plumbing and heating industry. Today, DOMESTIC ENGINEERING has altered considerably in appearance and size, yet its primary aim is still to serve the needs of its readers. The successful accomplishment of its purpose is evidenced by its growth.

The pictures on this and the three following pages are reproduced from the pages of DOMESTIC ENGINEERING of forty years ago. While quaint looking from the viewpoint of today, they represent the standards of the 90's. They serve to emphasize the advancement of the plumbing and heating industry during the period since the establishment of this business paper.





DOMESTIC ENGINEERING.

A MONTHLY JOURNAL DEVOTED TO

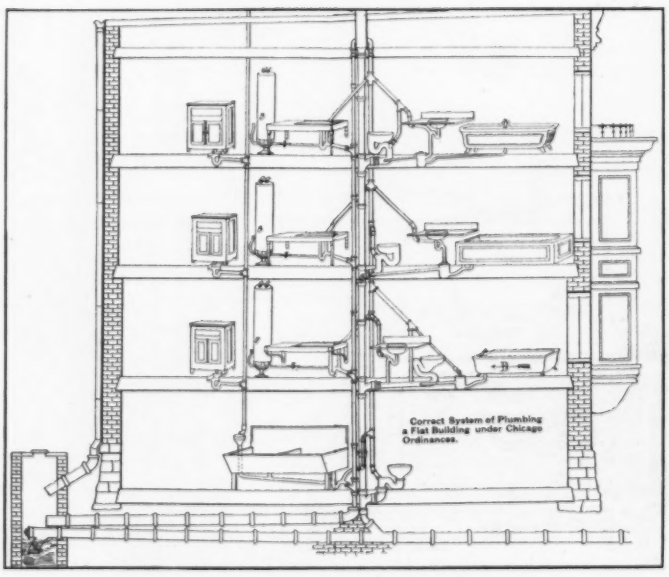
PLUMBING, LIGHTING, HEATING AND VENTILATING.

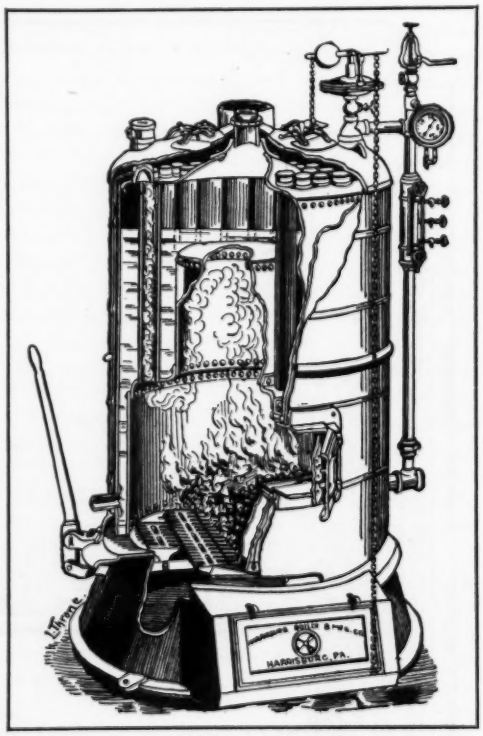
THURSDAY, OCTOBER 17, 1889.

DOMESTIC ENGINEERING aims to be a useful and helpful assistant to everyone engaged in the business of plumbing, heating, lighting and ventilating. To give plain, practical and useful hints and suggestions to its readers, and to become a medium for the communication of ideas relating to these matters. It will publish from time to time articles on practical subjects by experienced persons.

The illustrations, while they will not be profuse, will be an important feature, and will be used in all instances where they will aid in making the text clearer. Plumbers, steam and hot water fitters and gas fitters who have photographs or drawings of new work or of subjects that they think will be of interest to the trade, are requested to send them to the editor, accompanied by descriptive matter.

Pictures Taken From Our Files of Forty Years Ago





PLUMBERS CAN SELL FOLDING BATH TUBS.

A PROMINENT FEATURE.

IF plumbers only have the mind to take them up and make a prominent feature of them, there is no doubt that they can sell twenty portable folding bath tubs where they sell one stationary tub. The fact that this modern sanitary device is complete, self-heating and can be moved from one room to another, or from one house to another, causes the prospective purchaser to look upon it as a desirable piece of furniture, and not a fixture which goes with the house.

BILLINGS' IMPROVED PIPE BENDING DEVICE.

NEW WAY, ½ MINUTE.

Patented Sept. 24, 1889.

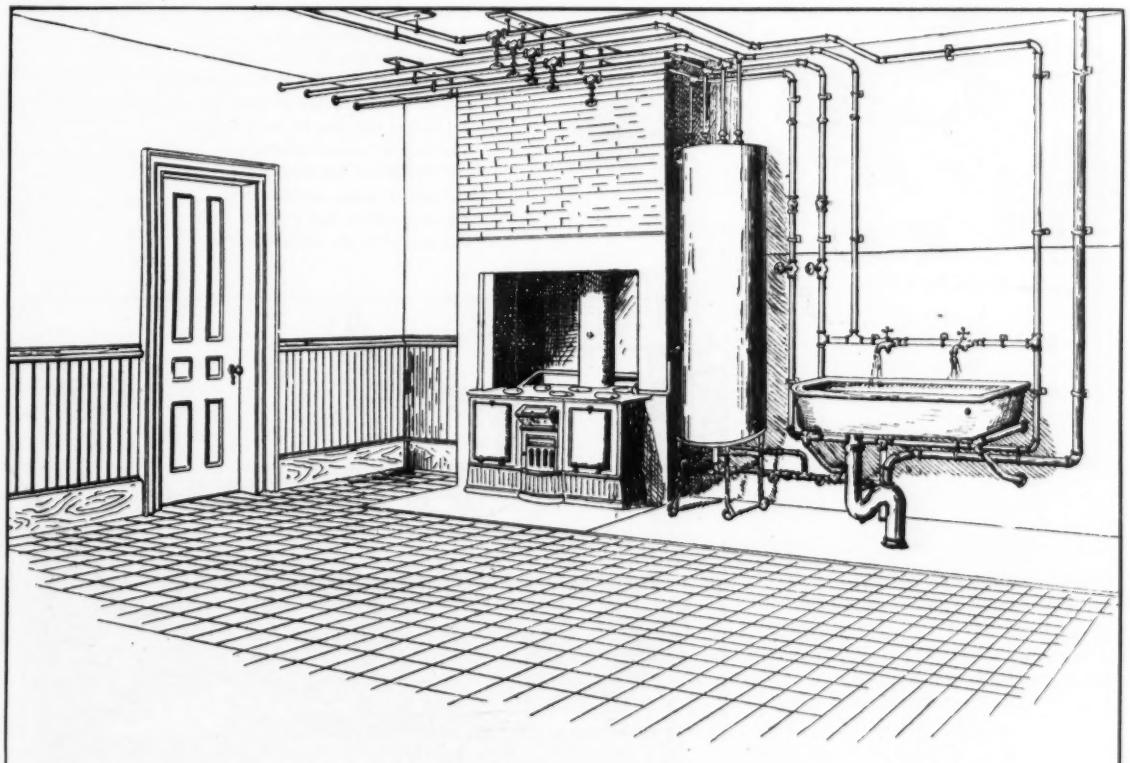
No Plumber can afford to be without them.

Saves Ten Times the Cost Every Month.

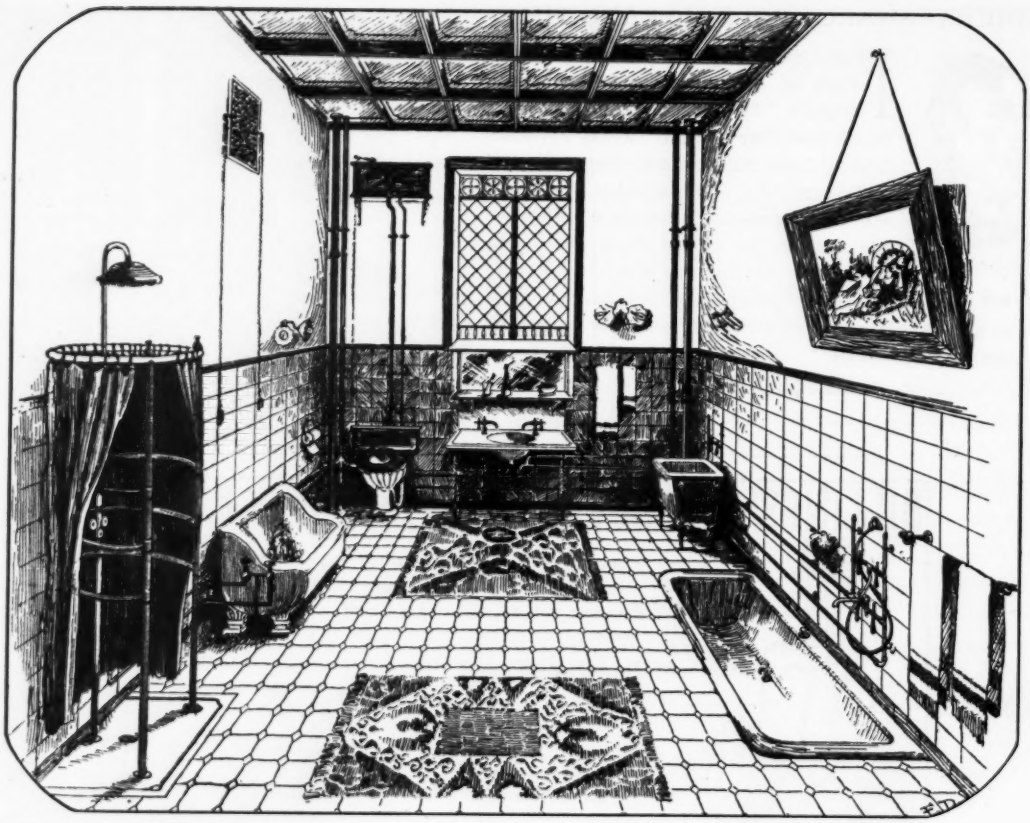
PRICE LIST:

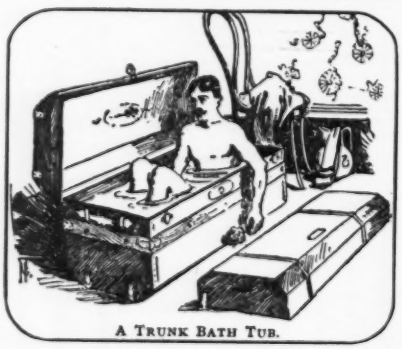
1 and 1¼ inch, $1.50. 1½ inch, $1.50.
2 inch, $2.00.
Set of above sizes, $5.00.

OLD WAY, ½ HOUR.



Kitchen in the Residence of Mr Frederick Vanderbilt, New York City.

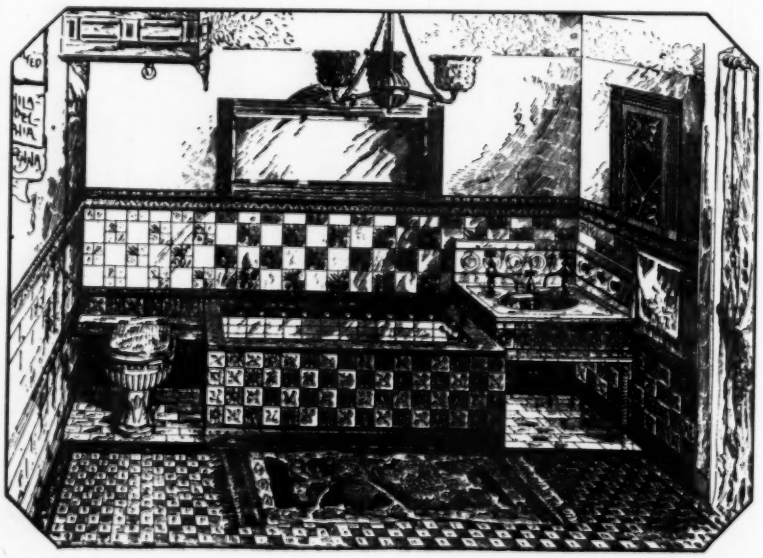




A TRUNK BATH TUB.

The plumber grins in fiendish glee;
Unmindful of the cold is he;
For pipes are freezing hard and stout
And he's the man to thaw them out.
While others look sad, cold and sour,
He works at 40 cents an hour.
To charge full time he don't forget;
The weather causes no regret.
He hurries not nor cares a cent
For others' woes—he is content.
The atmosphere that gives us chills
But multiplies the plumber's bills.

Pictures Taken From Our Files of Forty Years Ago



A History of the Development of the Radiator

By ARA MARCUS DANIELS

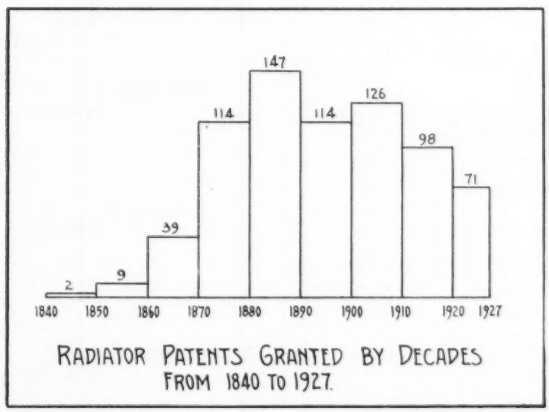


Fig. 1.—During the last eighty-seven years, no less than seven hundred and fifty patents applying to hot water and steam radiators have been granted

THE BIRTH of a useful idea, its gradual development into tangible form, the changes, modifications, alterations and elaborations accompanying its blossoming out into recognized popular usefulness and its ever present opportunity for still further advances in the art which it fostered, presents always an interesting field of research.

So it is with the practice of radiator heating. While this means of heating is at least seventy-five years old, the stages of development of the radiator to the familiar forms of today are appreciated by comparatively few, and the opportunities to improve and enhance are perhaps as great today as at any time throughout its development period.

Who can say when the first so-called "radiator" using hot water or steam, was installed in this country? Where can we look for some comprehensive picturization of the gradual unfolding of the idea that a receptacle for hot water or steam placed in a room would suffice to warm it to a comfortable degree for extremely low outside temperatures?

A search of the records of the United States Patent Bureau relating directly to the steam and hot water radiator as used in the application of steam and hot water heating to all types of structures would show a total of not less than seven hundred and fifty patents granted during the last eighty-seven years or an average of more than eight claims allowed per year. The chart of Fig. 1 illustrates the distribution of patents granted by decades from 1841 to the present.

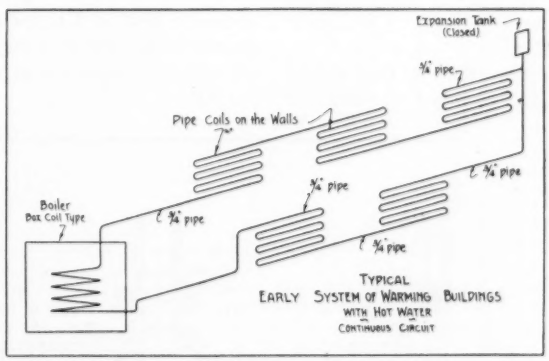


Fig. 2.—When hot water was first used as a heating medium for warming buildings, the system consisted almost exclusively of three-quarter inch piping. The boilers were of the box coil type with all fittings omitted, other than couplings. The expansion tank was seldom provided with an outlet. The coils located on the walls of the rooms represent the earliest type of hot water radiator and served as the only safety valve of these early systems

The radiator has a history. To learn something of that early history, we must knock at the door of the hot water heating system. In 1837, Joseph Nason, who established the Nason Manufacturing Company in 1841, went to England and identified himself with a Mr. Perkins, the inventor of the Perkins' hot water system of heating, which at that time was well known and recognized throughout England. Mr. Nason superintended the erection and installation work in London and elsewhere.

This early system of warming buildings by means of hot water was really a closed system constructed almost exclusively of three-quarter inch piping. The boilers were of the box coil type being made in one continuous length without fittings, other than couplings, with all bends made in the pipes.

The radiating surface consisted of similar coils made without fittings and no valves were provided for regulating the circulation. There was an expansion tank near the top of the system, but it was seldom provided with a safety valve. Thus, the earliest hot-water radiators were coils carried about the sides of rooms (probably first used in greenhouses) in a very primitive manner. The circuit was continuous from the boiler, through the different rooms, and back to the boiler. Hence, the water from one coil passed in turn through each of the others in consecutive order, with the result that the water in

each coil, after the first one served, was cooler than in that directly preceding it. See Fig. 2.

Obviously, it was soon found that pipes of large diameter were required in order that resistance to flow would be low enough to permit water to circulate in sufficient volume, to maintain a temperature in the last radiating surface served that would be high enough to assure heating service from that radiating surface. The bulk and appearance were objectionable features of this system, but the greatest objection was the fact that no part of the circuit could be interrupted without affecting the whole. Consequently, no valves were used and as it was a closed system, the radiating surface was the only element of safety. Hence the problem that faced the designers of these early systems was that of providing radiation having sufficient surface to dissipate heat at a rate equal to or in excess of that imparted to the water in the boiler. Thus, these early types of radiators were the safety valves of the entire heating system.

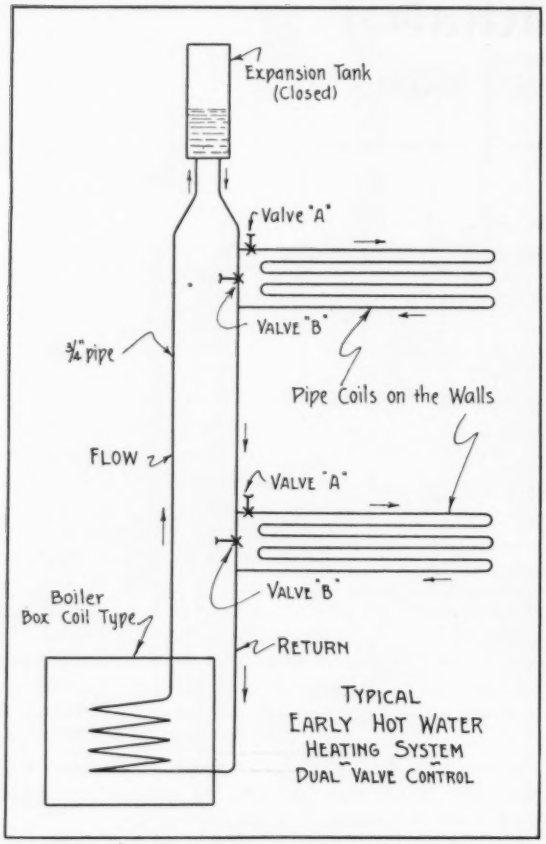


Fig. 3.—To permit separate control of the different coil radiators, two valves were next tried. While this solved the problem of control, the nuisance of handling two valves often resulted in trouble through the opening or closing of the wrong valve or both

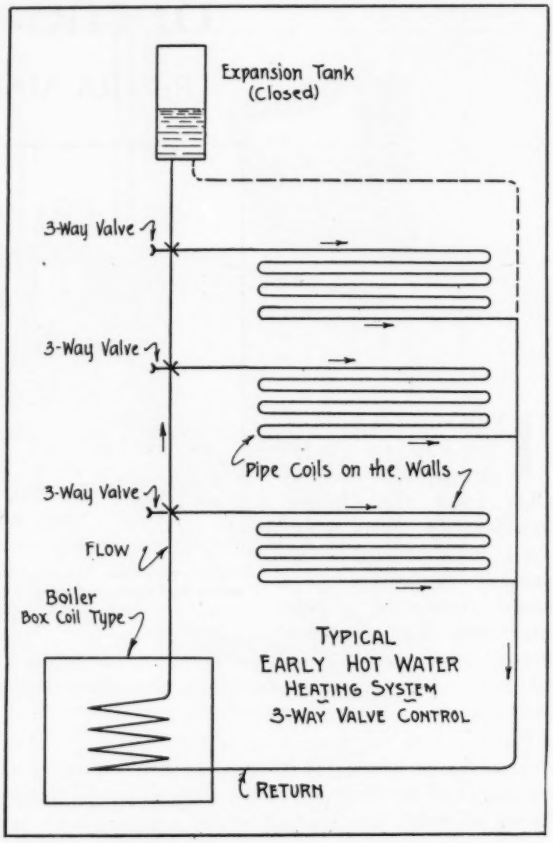


Fig. 4.—Replacement of the two control valves shown in Fig. 3 with a single 3-way valve served to eliminate the troubles caused often by the personal equation

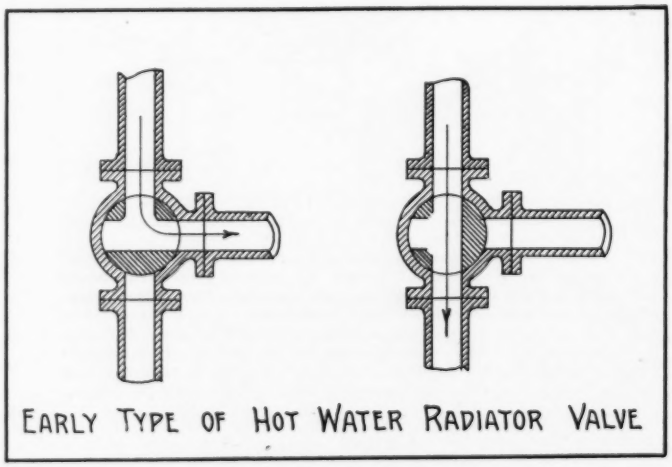


Fig. 5.—Illustrating the interior construction of this early type of hot water radiator control valve

Earliest Application of the Hot Water Radiator Valve

The next development was to provide a system built on the principle shown in Fig. 3. Two valves were provided for each radiating surface, as shown at A and B in Fig. 3, so that by closing A and opening B, the particular surface could be cut out with positive circulation still maintained. We have here what might be consid-

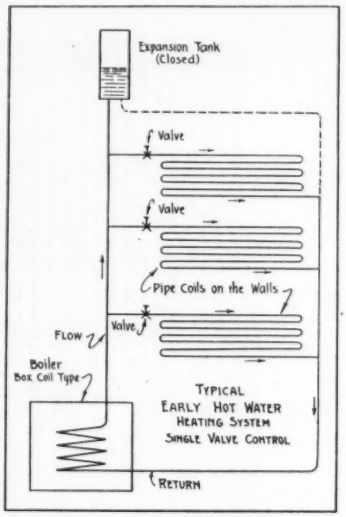
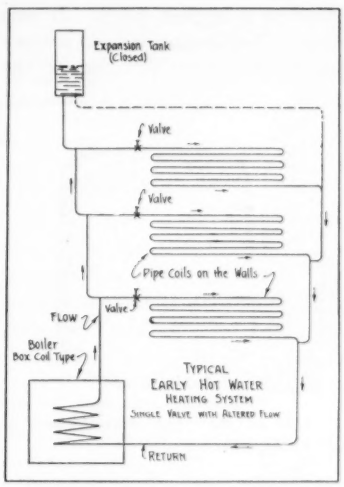


Fig. 6. — Piping the system as shown here served to contradict the idea that a continuous circuit was essential to circulation, permitted the use of a single straight-way valve and proved that part of the flow would pass through the radiating coil and still maintain a circulation through the flow and return mains



Fered the earliest application of the hot water radiator valve.

Fig. 7. — To assure more even distribution of flow, resistance due to change of direction of flow was introduced resulting in improved heating service

While this arrangement solved the problem of control of water to respective radiating surfaces, so long as valves A and B were closed and opened properly, yet, so often, one valve was opened without closing the other or vice versa, that circulation was entirely stopped with resultant trouble. So, to correct this condition, one three-way valve was used to replace the two valves, and installed as shown in Fig. 4. The operation of the valves is illustrated in detail in Fig. 5. The large pipes of the same size throughout the system were still used.

It was decided that a continuous circuit was not essential to circulation. On this theory, the radiating surface was connected to the piping system as shown, typically, in Fig. 6. Here, a single valve was used on each radiating surface. Part of the flow circulated through the heating surface or coil when the valve was partly or wide open, while the main circuit was maintained through the main supply pipe to the tank and thence through the return pipe to the boiler.

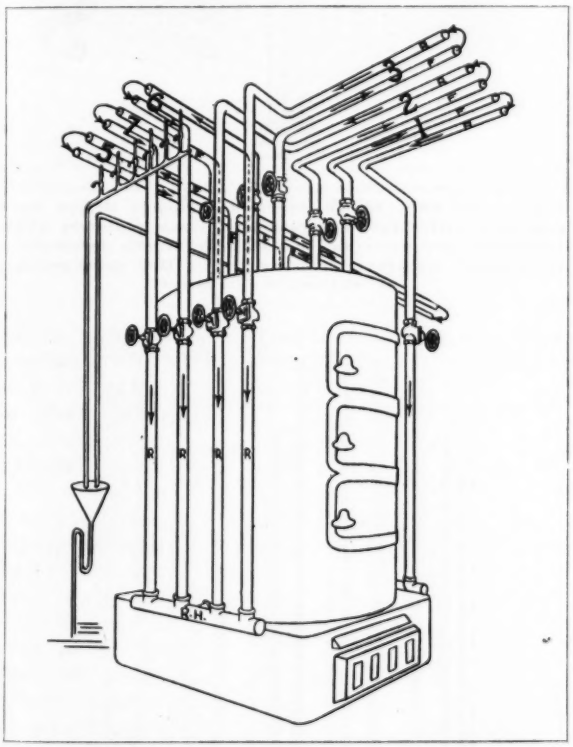


Fig. 8.—Piping for hot water heating systems in these early times was treated much as plumbers treated circuits for domestic water supply in the best work. Each flow and return line was valved at the boiler with a small "draw-off" line for emptying the circuit

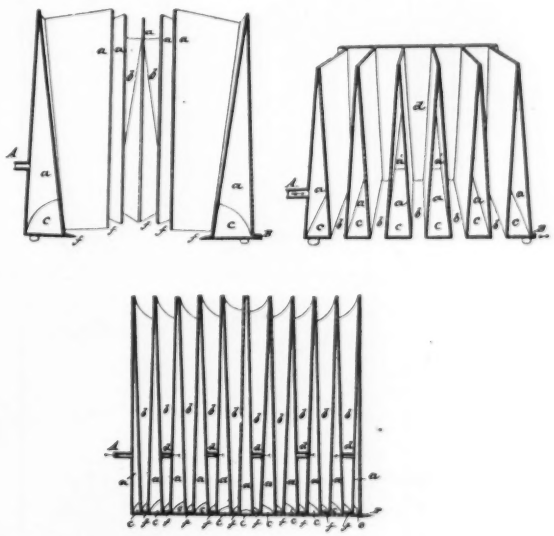


Fig. 9.—The earliest idea for a steam or hot water radiator designated "The Temperative Heat-Distributor." It represents a crude form of the radiator of a later period

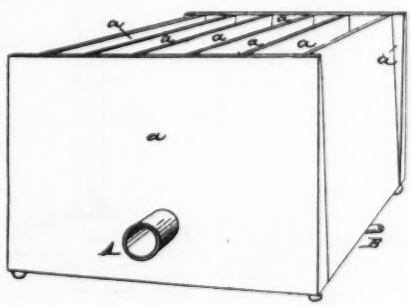


Fig. 10.—"The Heat Distributor" of the early 50's in box form

Under these conditions, radiating surfaces at different elevations above the boiler, delivered different quantities of heat for the same surface. The upper coils or surfaces were warmer than the lower coils. The tendency of the hot

water was, and is, to flow to a highest point. It was passing the lower branches. Distribution was so uneven that various ideas were tried out in practice in the

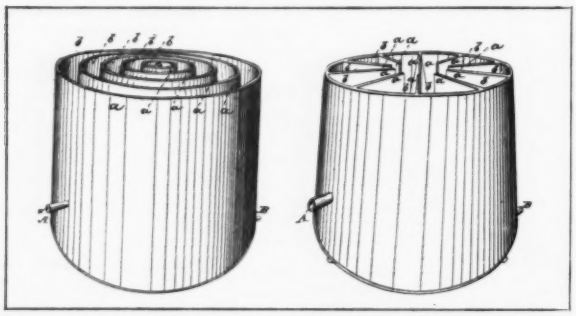


Fig. 11.—The cylindrical form of the "heat-distributor" of the early 50's

effort to produce uniform distribution. It is interesting to note that change in pipe sizes was not considered, the old idea prevailing always that large pipes of the same size should be used throughout the system.

Finally, the plan of introducing resistance by changing the direction of flow was tried. The piping arrangement shown in Fig. 7 was employed. Thus, the current of hot

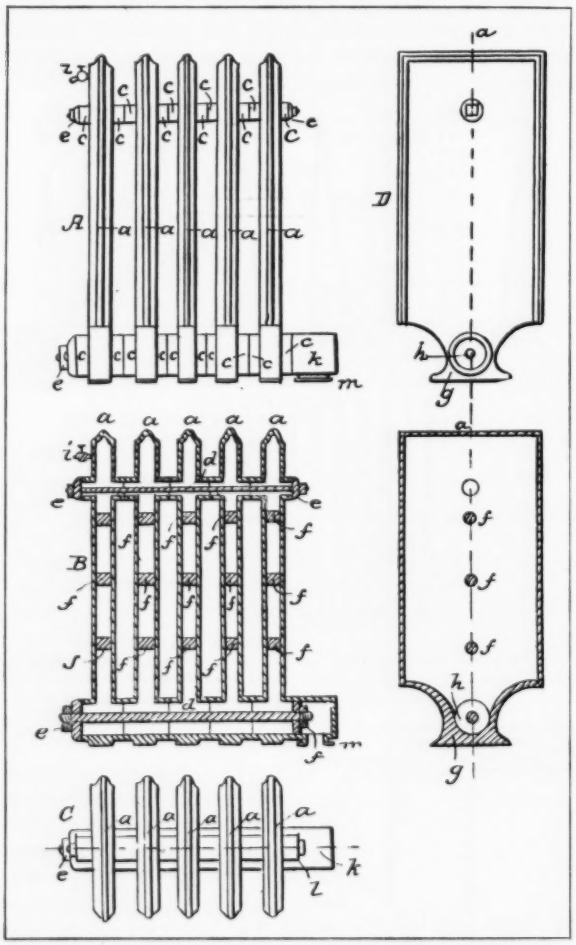


Fig. 12.—About 1860, the steam cast-iron radiator began to take form by which it may be identified with that of today—a crude five-section radiator

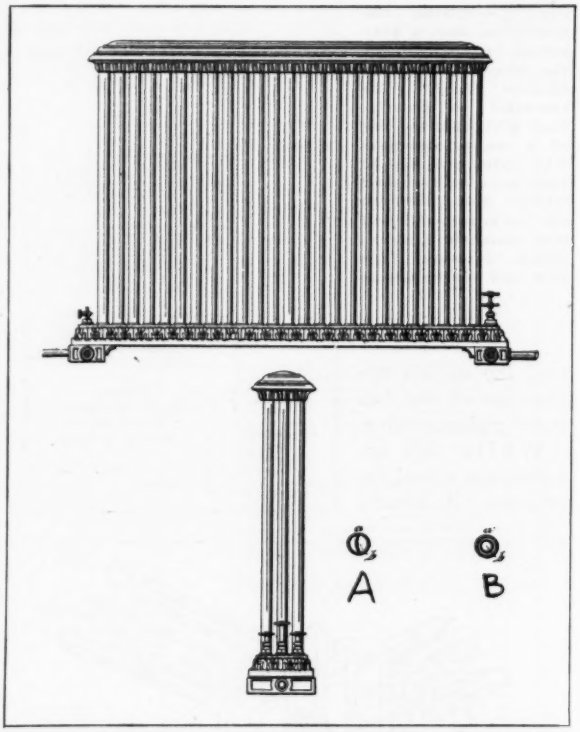


Fig. 13.—In 1862, Joseph Nason and Robert Briggs were granted a patent for improvement of steam radiators which stimulated immensely the manufacture of this apparatus—the general appearance followed closely that accompanying the illustration for patent

water was divided and diverted so that flow to the radiating surfaces was improved and the coils or surfaces emitted heat more nearly in proportion to their radiating surface.

Today, it may seem strange that, at that time, no one thought of controlling or governing the flow through proper proportioning of pipe sizes, but when it is realized that there were available in those days comparatively few

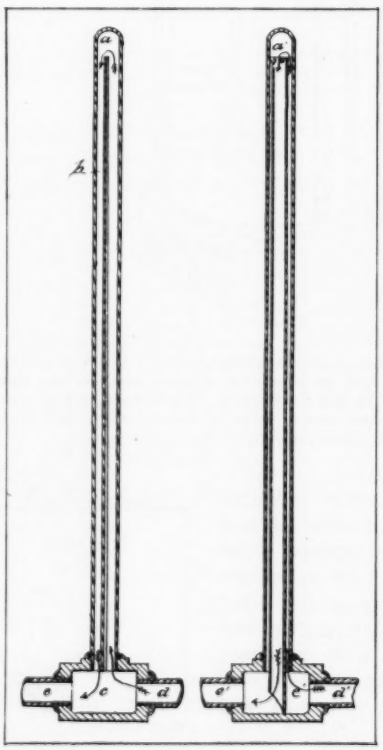


Fig. 14.—The Nason and Briggs patent related primarily to the construction of the tubes—the diaphragm "b" was claimed most essential for more efficient operation

different sizes of pipe, the impracticability of so doing is appreciated.

Fig. 15.—The Nason "Standard" wrought-iron welded tube radiator with 4 rows of tubes built in 8 sizes equipped with one inlet. In use during the 60's and 70's

Thus, we look to the principle of hot water heating for our earliest forms of radiators and we realize that

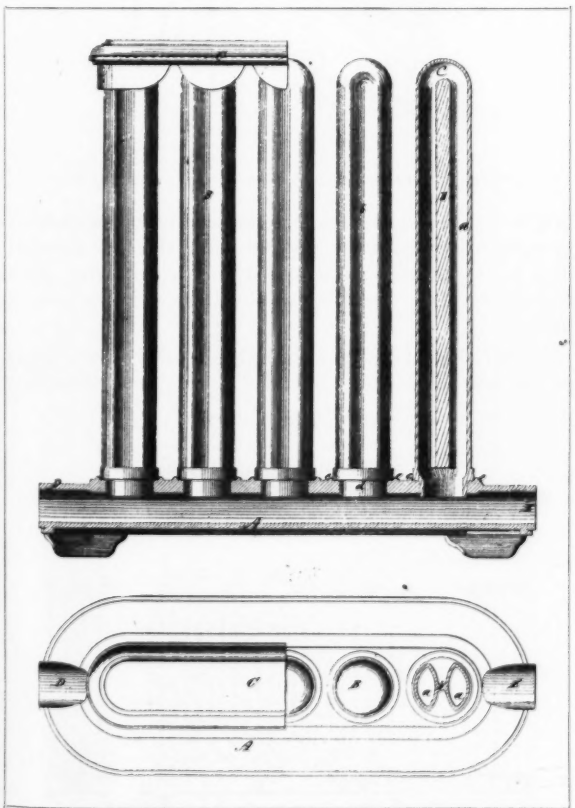
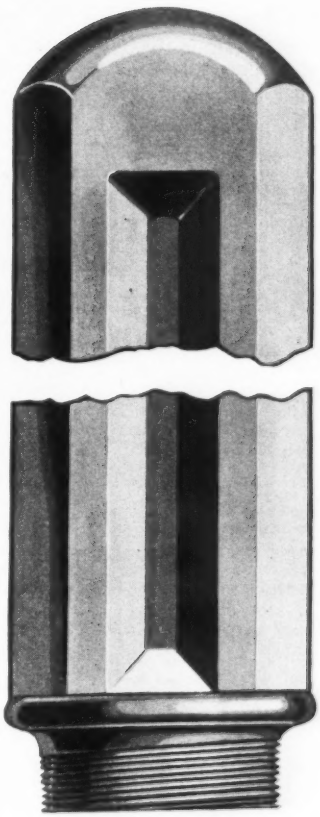


Fig. 16.—In 1872, Nelson H. Bundy was granted, probably the first patent on the loop tube whereby independent devices as in the Nason patent were eliminated

Fig. 17.—Cross section and outward appearance of the Bundy-Tompkins steam and hot water direct radiator loop



these radiators of the coil type persisted so long because of the prevailing general idea that continuity of the current of water should not be interfered with under any circumstances.

One of the earliest hot water installations employing these coil radiators made in this country was handled by Mr. Nason above mentioned. It was installed to warm the counting room of the Middlesex Mill in Lowell, Mass., about 1841.

For this work, practically all pipe used was imported from England for the job.

It is interesting, in passing, to observe as the art progressed, that

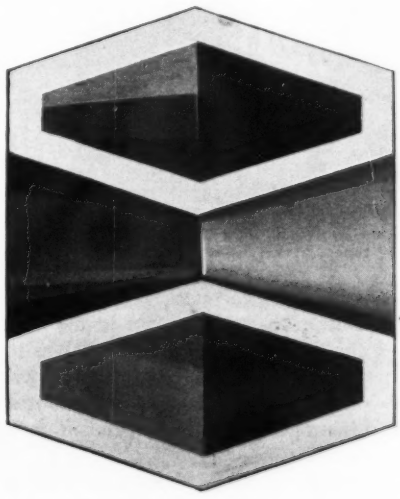


Fig. 18.—Radiator loops as built in three types of radiators used during the 80's and 90's. These loop sections were used in steam and water radiators. The standard section was patterned so that every 12 in. of lineal length represented one sq. ft. of heating surface, full measurement. The steam radiators had one-half sq. ft. of surface per loop in the base and hot water radiators had the same total in both base and upper circulating chamber making one sq. ft. per loop. The enlarged and extended sections contained 20 per cent more surface than the standard section; the extended, however, occupied less floor space than the enlarged

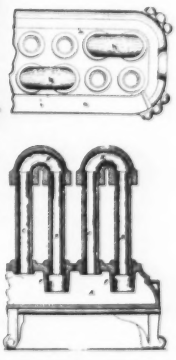


Fig. 19.—To assure steam entering certain tubes before others, projections were placed thereon and more responsive heating of the radiator was claimed—mostly a dream of the patentee

the hot water circuits, in these better and improved systems, were treated in very much the same way as plumbers treated circuits for domestic water supply in their best work. In Fig. 8, it is seen that the flow and return pipes were supplied with valves close to the boiler. A line of small draw-off pipes were placed in the flow and return pipes on the house side of the stop valves to allow drawing the water from a line or circuit and emptying into a funnel. The funnel was trapped into the sewer and the overflow-pipe from the expansion tank was also discharged into it.

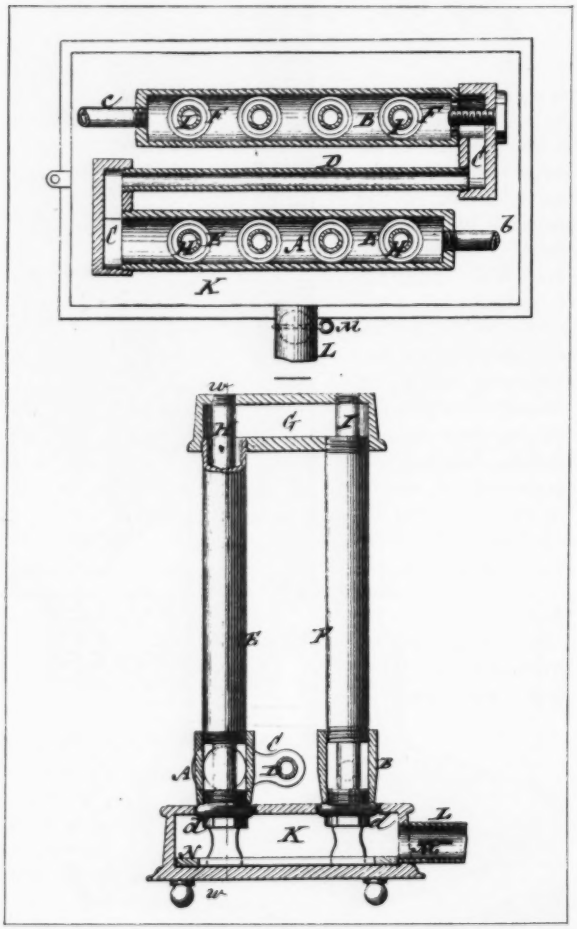


Fig. 20.—One of the early types of direct-indirect radiator—the radiator rested on an "air" base K, and air passed up through the tubes

Steam heating apparatus, in all its details, as used in America, is peculiarly American, and its origin is properly credited, so far as the writer is informed, to Joseph Nason. The radiator probably owes its birth to the use of the tapering thread on the ends of the pipe. The original radiator, possessing characteristics resembling present day radiators, consisted of a row of wrought iron pipes screwed into a cast iron base with the upper end of the pipe closed by welding in a metal button at the top.

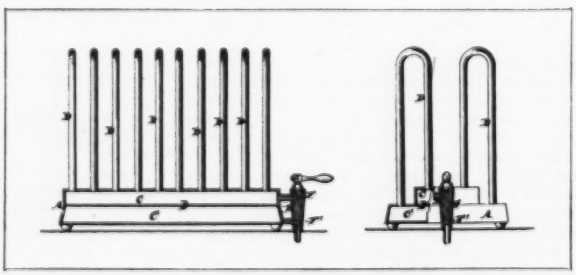


Fig. 21.—Another type of the radiator showing separate steam and water chambers

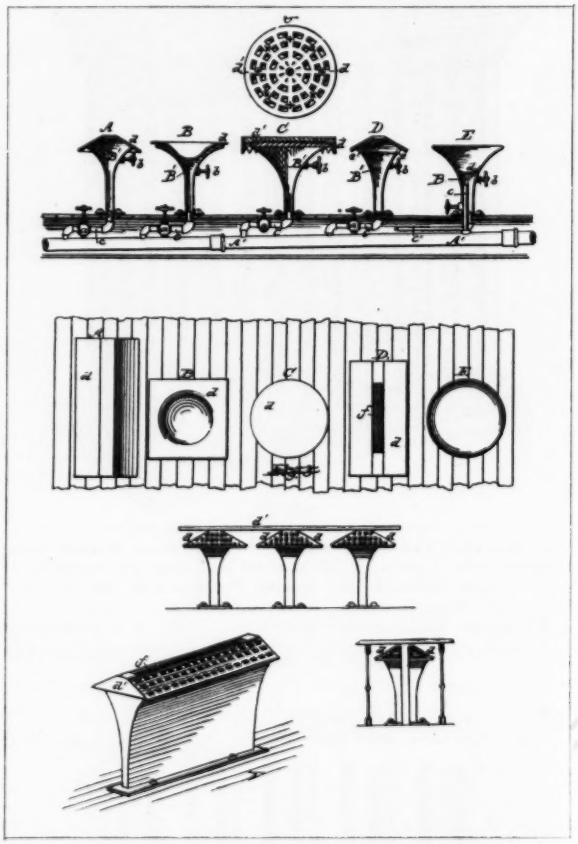


Fig. 22.—Ideas of radiators of the early days

To Mr. Nason credit is given, by some, for the coining of the word "radiator" as it is used today to designate

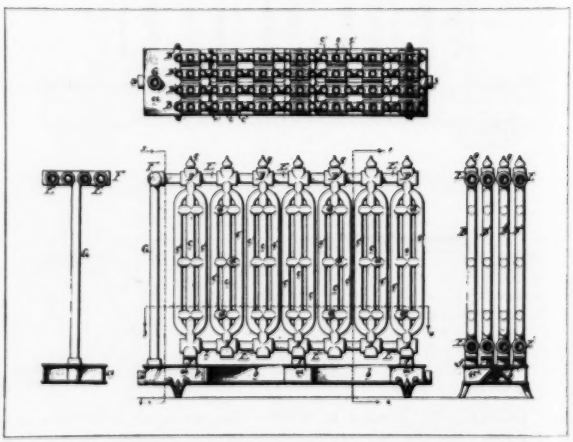


Fig. 23.—Other ideas of radiators of the early days

that part of the hot water or steam heating system by which structures are warmed through standing direct radiation. Unquestionably, Mr. Nason may be consid-

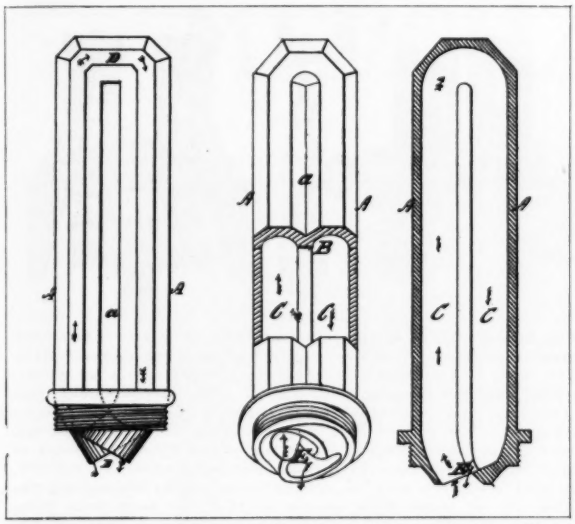


Fig. 24.—The prototype of the two-column radiator—about 1875 to 1880

ered the father, if not the grandfather of our present systems of warming buildings as the art is practiced today. Much of his time was spent, also in the develop-

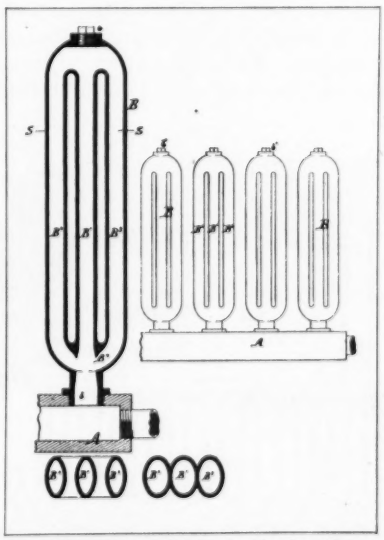


Fig. 25.—The prototype of the three-column radiator—about 1875 to 1880

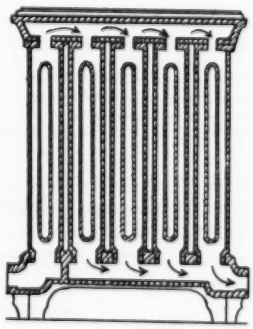


Fig. 26. — The "Bundy-Tompkins" hot water radiator as first constructed. The partition at left was introduced to turn the water into the head and prevent its passing from inlet to outlet. This partition was found later to be unnecessary

Courtesy Richmond Radiator Co.

Fig. 27.—An ornamental type of one of the "old boys." With the radiator valve cast directly into the radiator, it presented a unique appearance. The particular radiator shown was installed in a Chicago building in the late 60's or early 70's

ment of fittings, valves, etc., used in such work, for he took out patents for cast-iron fittings, malleable fittings, tapered joints, screwed and flanged valves, the angle

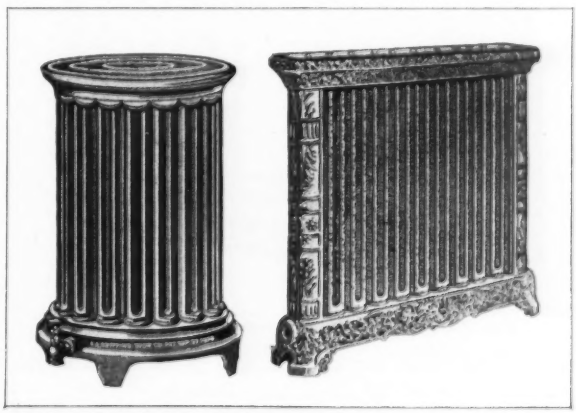
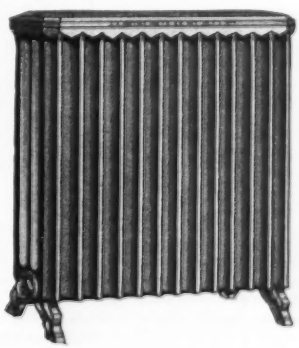


Fig. 28.—Circular radiators, popular types of long ago. The circular radiator was built in 36 and 42 in. heights with base diameters varying from 17¼ to 36 in. with heating surface ranging from 35 sq. ft. to 306 sq. ft. for the high type and 30 to 252 sq. ft. for the low type

Fig. 29.—Renaissance direct radiator, decorated pattern. This single row radiator was built in three heights, 24½, 31 and 37 inches, of the standard width

Fig. 30.—Triumph direct radiator. This radiator was built only as the three-column type with circulation up the central and down the two outside legs. The sections were of parabolic form. It was furnished with top as shown. The sections were connected by 2-in. nipples, cut from extra heavy oil well tubing to give large area as compared with 1½-in. nipples cut from ordinary steam pipe. It was built in a 36-in. height with 5½ sq. ft. of surface per section 8 in. wide



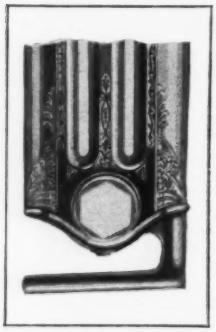


Fig. 31.—Carpet leg radiator. In the days when carpets to the washboard were the "right" thing in all properly furnished structures, the carpet leg radiator served a very useful purpose. The legs were detachable and so designed that the radiator would stand alone, even when not connected. Their use added greatly to the convenience of cleaning and fitting of the carpet thereunder

Fig. 32.—Early type of direct-indirect radiator

valve, globe valve, stop cock as well as for much of the machinery needed for their manufacture.

A few patents, however, relating to radiators and

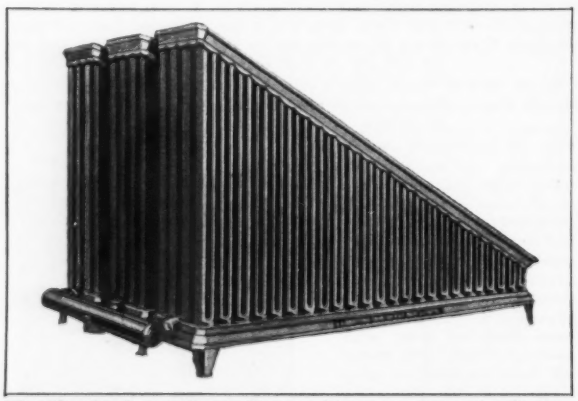


Fig. 33.—Duplex stairway direct radiator. A type of radiation for placement under stairways in hotels, halls, lobbies, etc., where this floor space not otherwise usable might be utilized. The radiator was usually built on a high leg base so as to allow ample space underneath for air to pass up through and between the loops

radiating surfaces were issued prior to those on which the Nason Manufacturing Company built its radiator business during the years from 1862 forward. No rec-

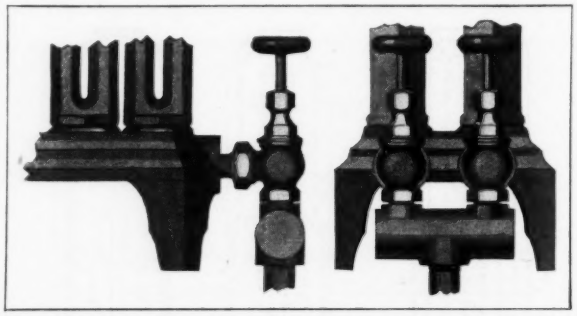


Fig. 34.—Improved duplex radiator base. The use of this base made the two-row radiator equivalent to three distinct sizes. The base was divided into separate compartments by a partition and the heating medium to each compartment was regulated and controlled by a separate valve. The leader was used for convenience and economy in connecting up, saving pipe and fittings and cutting of the floor. Economy of heat to suit weather conditions was obtainable as follows: In very moderate weather, the valve or valves controlling the rear row of loops were opened so that the heat from them would be moderated considerably by passing through the front row of loops, which were not in use; in fairly cold weather, the valve or valves controlling the front row of loops were opened, leaving the rear row idle and thus a more direct and unimpeded heat supply with resultant higher temperatures resulted; in extremely cold weather, all valves were opened so that the entire radiating surface was active

ords of the actual commercial use of the radiators manufactured on the principle of these prior patents are available to the author. Their appearance as visualized by the patentees and the claims as set forth by them are in-

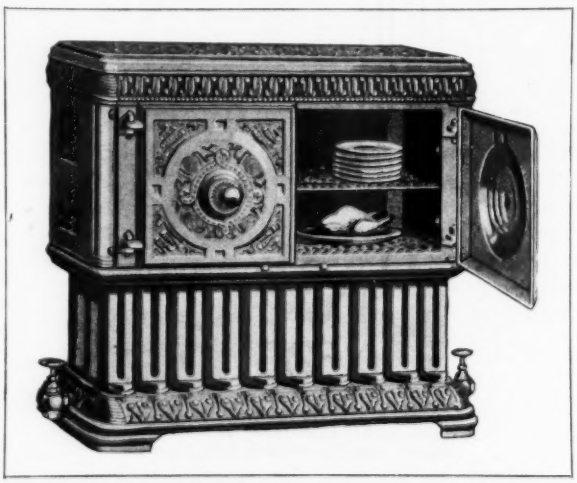


Fig. 35.—Hot closet dining room steam direct radiator. A radiator embodying the Bundy loop. This type was built with closets 35 inches long, 14 inches wide, and 18 inches high; overall height of unit—36 or 42 inches. They were advertised as having a removable or adjustable shelf with amply large doors to accommodate the dishes. The heating surface varied from 33 to 70 sq. ft. each

teresting as they present early ideas which, while crude in application, undoubtedly stimulated the developments which followed.

On November 4, 1851, a patent was granted to K. K. Ingalls for "a new and useful arrangement, for heating

(Continued on Page 111)

PLUMBING & HEATING MERCHANDISING

Looking across the colorful store display

"Continued"

A merchandising story which lives up to its name

"CONTINUED" is, perhaps, a peculiar name for a story of this kind. But it expresses best the impression gained after a visit to the store of the Dallas Plumbing Co., 2425 McKinney avenue, Dallas, Texas, following a visit made just six years ago.

The second visit was brought about by reason of the fact that we had received some months previous a set of photographs showing the company's sales room after it had been remodeled to display the new colored ware in most effective style.

Six years is, in some ways, a long time. According to the survey DOMESTIC ENGINEERING made, something like nineteen per cent of the men in business each year close up their shops. So that, in six years, quite a number of shops have closed their doors for one reason or another. Incidentally, this is considerably lower than other retail lines. Most men go into business with the intention of making a success of it. They probably have some reason to expect that they will win that success. Something gets into the way of their intention. It doesn't continue to function.

Continuous Progress

Naturally, if a firm is to enjoy growth and success, there can be no let-up in effort. The application of sales and management ideas must be continuous, and progressive.

In 1923 we ran a story about the Dallas Plumbing Co., under the title: "Look to the Men." "Of what is a business organization composed?" that story asked, and answered: "Men! This being true, and every last one of us knows it is, it pays to first look to the men. Men create organizations. Organizations create customers. Customers create business. Business creates success. And success is what every organization—large or small—is looking for. So, then, let us look to the men, that the men may better look to the success."

At that time we outlined the management policies of the company with reference to the men it employed. As Mr. Dickerson himself said: "Business never fails. It is men who fail. Therefore, look to the men."

The whole job of managing a business might be looked at as a sales job. That's why, no doubt, you will usually find that the man or men back of a successful firm possess persuasive ability to a great extent. Certainly it is true of Mr. Dickerson. An amusing story of his youthful years will serve to indicate that his powers of persuasion developed early. In his spare time he was interested in the theater and often served in one capacity or another. On one occasion a famous speaker was billed to appear. Mr. Dickerson was in the box office when a distinguished looking elderly man appeared at the window and asked a question about the event. Mr. Dickerson launched into a selling talk and the gentleman finally passed his dollar through the window.

When the moment came for the famous speaker to commence his talk, he said: "I have spoken under many conditions, but this is the first time I ever paid to hear myself talk." Mr. Dickerson had sold a ticket to the speaker himself.

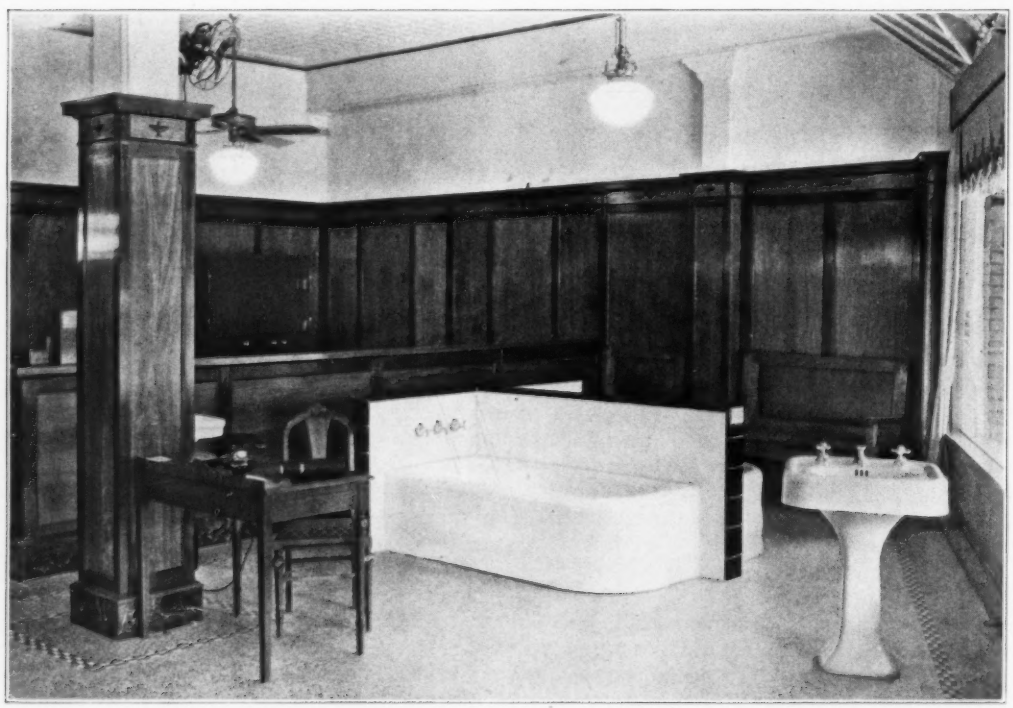
Keeping Good Men

It is not surprising, therefore, to find that there is a brand of loyalty to the firm among its employes which is to be highly prized. Labor turnover is very small. When a man applies for a job and has been questioned as to his experience and ability, he is asked whether he wants a permanent job. "We don't want men who only want to work a month or two," says Mr. Dickerson. Among the present employes of the company the average length of service is ten years. "We have to train men to our way of doing things," continued Mr. Dickerson. "And when we have them trained we want to keep them."

This process of keeping them is a kind of sales problem in itself. Periodical meetings are held. But an even closer contact is established with each worker by means of personal chats with Mr. Dickerson. He likes to talk with the men, to get them to express their ideas and to find out what they are thinking. When the men are doing good work, Mr. Dickerson feels that they deserve to have the fact mentioned, and if any man's work seems to be slumping, he wants to know why.

There is, too, a relationship between the consistent selling campaign which the company conducts and the feeling the men have toward their employment. Just a few days before our last visit, Mr. Dickerson had one of the men in his office for a talk. "Do you know," asked the man, "how much time I have lost in the last six months? Only one week's time on days too rainy for me to work." The contrast in his mind with other employment conditions is clear. The company's selling efforts keep him busy.

At Christmas time there is a party given in the big garage space at the



Note the rich wainscot—a good background for color

back of the main building. One of the members of the firm plays Santa Claus and the men and their families are invited. This helps consolidate the loyalty of the men by arousing a similar feeling in their wives' minds.

All these things, as Mr. Dickerson says, tend to eliminate causes of friction. If he talks with a man who thinks he has a kick coming, before that man has a chance to nurse his grievance along until it assumes the importance of a mountain to him, the matter can be settled in a friendly way.

Building a Volume of Repair Work

The idea of continued effort to improve selling methods is aptly illustrated by the fleet of portable repair shops—completely equipped automobile repair trucks—which the company maintains. Dallas experienced its share of the new building boom. Up to 1926 the Dallas Plumbing Company was enjoying a fine volume of new work and the repair business was not given any special consideration. When the inevitable slump came, the company did not continue its efforts to beat an unbeatable game and did not intend to get into the scramble for business at any price which followed.

Mr. Dickerson was convinced that the best thing to do was to turn to repair work. In considering the quickest method by which a volume of this business might be built up, he turned to the completely equipped repair truck and with characteristic energy put a fleet of them on the street. In about eighteen months the company was enjoying the biggest repair business in the state. Mr. Dickerson's comment on the trucks was this: "I could charge their whole cost to publicity." In building up the repair business he called in the services of a local advertising agency, feeling that it was well to entrust this special job of merchandising to experts.

Again, when color came into its own in plumbing ware, Mr. Dickerson remodeled his showroom. At present there are six built-in tubs with tile of harmonizing or contrasting color. The store has a big sweep of windows and the effect from the street is most attractive. Naturally it has brought a great many people into the store. In one case a man and his wife dropped in, attracted by the display and by the fact that here they found exactly the color combination they desired, although they had been told that it could not be secured. In another case a couple dropped in and before they had left a contract had been signed.

Another store view. The offices are at the right

Selling in the Store

To handle callers at the store, there is always someone on duty. Usually one of the superintendent-salesmen will be found there. It is his duty to show the display and, of course, to endeavor to close the sale. If he does not close it then, the name and address of the prospect is taken and a later call is made at the home. By far the greater number of new prospects are secured in this way—the store and its displays have proven to be productive of business.

It is, as will be seen from the photographs, a beautiful display room. The paneled walls are dark and rich in tone and supply a background in keeping with the varied colors of the bath and tile displays. Standing inside the door the prospect's eye may roam leisurely across the breadth of the room and, if he is a normal

human being, he will feel the stir of desire. He can't help it. And, from the experience of the company, he doesn't try to help it. He buys.

It is always interesting to note how men working on a certain line of thought, though they may be thinking along different channels, will arrive at similar conclusions. One of the cardinal rules recently announced by two professors of New York University, who have analyzed something like a hundred thousand sales interviews, was this: In the first half of the sales interview, inquire—draw your prospect out—get him to express his preferences and his objections.

Here's the way Mr. Dickerson restates that rule, as he has worked it out for application in the sales room: "We let our customer sell himself," he says. "We lead him to express himself." For example, against the left wall of the room as you enter are four or five different makes of water heaters. When a prospect for a water heater enters and makes known his want, he is taken to that side of the room. All of the heaters are connected for use, as will be noted from the flues. No attempt is made to sell the prospect one or the other of the heaters. "We lead him on to express his knowledge of heaters or to give us some clue as to the heater about which he may have formed a favorable impression. Then we sell him that heater." Simple, isn't it? Yet that rule of selling is violated every day, probably because it is so simple.

Another thing which has contributed to the success of the store is its location. It was well-chosen, and is improving daily as a retail location. A check of a near-by corner, taken from six in the morning until midnight, showed that thirty-eight thousand automobiles passed during that time. With a striking display on view all day and lighted well at night, the possibilities are tremendous.

Not only is the position of the Dallas Plumbing Company favorable with the general public. About twenty-five per cent of the four hundred men and firms in the architectural or general contracting field give work to the company without competition—and this is a tribute to the quality work done by men who have had ten years or more of experience with the company and to the excellent sales contact which is maintained with these architects and contractors at all times.

Mr. Dickerson's private office. Impressive, isn't it?

Effective Newspaper Copy

Another phase of the merchandising of the Dallas Plumbing Co. must be touched upon. Newspaper advertising has done much to make the company's name and its service familiar to the citizens of Dallas. Understanding the true value of this type of advertising, the company has not indulged in spasmodic efforts. Over a period of years the whole sales message of the company has been carried to the people of Dallas over and over again.

Take the merchandising of their "Porto-Plumb Shops," the fleet of completely equipped repair trucks maintained by the company. A planned campaign put over the idea of a "one trip" repair service. Here is how a typical newspaper ad read:

A Simple Leak—
Or Serious Trouble

A leak in your plumbing is like a high temperature in illness—it may mean only a slight trouble,

easily remedied, or something more complicated.

No matter what may be wrong, a "Dallas" Porto-Plumb Shop will take care of it in ONE trip, quickly and economically. These handy trucks are equipped with all tools and supplies, and are driven by expert mechanics.

The "one trip" idea was carried throughout the campaign, and is used whenever the repair trucks are advertised.

Of the general run of newspaper advertisement, it is impossible to give more than an idea of the topics covered, because they are so numerous. There is the extra bathroom idea, the idea of quality fixtures and workmanship, colored ware, and, again, another series of advertisements presenting the repair trucks from a new angle. One is headed "Save Safely," another refers to the growing fleet of repair trucks and is headed "Popularity"; another "4 Reasons Why Dallas Will Save You Money on Repairs."

These ads are all large enough to demand attention when seen in the newspaper page. They are prepared by a competent advertising man, who has the job of giving expression to Mr. Dickerson's merchandising ideas —hence the ads show the professional touch. But the most effective thing about them is their continuity—for years they have been building up an accurate idea of what Dallas service means.

It is this continuity of merchandising which led us to give this story the name it has. No strikingly clever idea, no splurge of merchandising for a short time, will produce the results which come from continuous merchandising effort. In other respects, the advertising might be poorly done —but if there is continuity, the cumulative value of constant repetition will be strong enough to overcome those other defects. Where, as in the case of the Dallas Plumbing Co., continuity and competent advertising and merchandising go hand in hand, their effectiveness in building profitable business is a foregone conclusion.

A Woman's Viewpoint

An interview with J. D. Lanham, Greenwood, Miss., who uses DOMESTIC ENGINEERING'S *Retail Advertising Service for his newspaper space*

By PATTIE McGLATHERY

"MR. LANHAM, in reading the Greenwood Daily Commonwealth," I said, "I notice that you are one of the most frequent advertisers it carries. Do you mind telling me if the returns come up to your expectations?"

"Indeed they do," he answered frankly. "I reap the best kinds of results, or I wouldn't do it."

"All of the insertions are good. However, I have been especially attracted and interested in the ones with the pictures, because they strike the heart of the home."

"That is the target at which I am aiming," he said, his face lighting up. "Comfortable and convenient homes are generally happy homes. Happy homes make for better citizenship. I can tell the minute one of my employes enters the store in the morning just the frame of mind he left home in. It shows in his face, in his acts and in his work. There is nothing more conducive to a man's efficiency than the proper living quarters. A woman is only human after all. She can't send her husband, father or brother off to work with a steaming bath, well-cooked breakfast and a smile unless she has the necessary machinery to heat that water and to cook that breakfast with. It is pathetic how many housekeepers are not only cooking on a three and four-eyed coal oil stove, but are heating all of the water in a teakettle or pans for washing the dishes, bathing, and often washing the clothes in."

Dishwashing Made Easy!!

If there's any task which seems to sum up the drudgery of house-work—it's the washing of dishes. Every meal leaves its quota. We can't suggest any way to eliminate them—but we can suggest a way to put their washing on an efficient basis. First: A sink of the right height so you won't tire from bending; Second, a modern swinging spout faucet with spray; Third (and this almost does away with the whole problem): An electric dishwashing sink.

J. D. LANHAM
—PHONE 55—

"Well, your illustrations are certainly distinctive and the wording is convincing. Of these advertisements I have clipped, has any special one brought you more business than the others?"

Advertisements That Sell

He thought a minute. "Well, yes —the one about two baths, next the one about hot water and 'Dishwashing Made Easy.' The day is here when you can't rent or sell a house unless it has a first class bathroom. I mean one with a tub. The tub used to be left out on account of the expense. But not now. Salaries are such that persons can have whatever they choose. Waterworks are no longer the rich man's toy.

"The remuneration on the extra bath has been great. For instance, if a man has a private place to shave in with plenty of hot water he is

"Two Baths"

—The sales value of the extra bath is great

Modern homes are being equipped with more than one bath. Older homes which must compete in the rental or sale market with these newer types of buildings ought to be remodeled in order that they may have some chance in the keen competition. A second bath can be fitted into a space as small as five feet square—and most houses have that much waste space somewhere. What it will cost to put in the extra bath will pay a much larger dividend in terms of rental or sale value. Telephone for particulars.

J. D. LANHAM
—PHONE 55—

going to do it before he leaves the house in the morning. That duty is over and he saves twenty-five cents; if he has to go to a barber shop, at the least possible cost he loses fifty cents worth of time. This added to twenty-five cents equals seventy-five cents a day. Thirty days in a month is twenty-two dollars and fifty cents, and twenty-two dollars and fifty cents multiplied by twelve is $270.00. There you are. I can equip a bathroom for that amount on up."

"You surely have the calculations down to a fine point."

"But that isn't all," he continued, "I'm making it possible for everybody to have a bathroom, the extra one, I mean. I'm inaugurating a new method of payment. That is, I'll fit up the bath complete and let the customer pay for it on the installment plan, so much a month."

Using Model Apartments

Part of this campaign of Mr. Lanham's, reports Miss McGlathery, was carried on following his participation in the building of a set of model apartments. When these apartments had been finished, and before they were occupied by those who rented them, they were thrown open to the public from two until nine o'clock in the evening for a week. The first day over four hundred visitors autographed their names in a souvenir album.

Mr. Lanham's own advertising called attention, of course, to the plumbing, heating and electrical work which he had installed. Following this showing of the model apartments, Mr. Lanham ran the series of ads, a few of which are shown in this page. These ads were taken from the Retail Advertising Service published in each issue of DOMESTIC ENGINEERING.

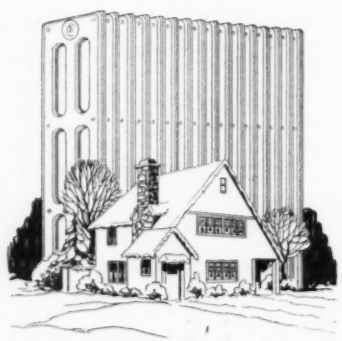
To reinforce the model bathroom and kitchen idea, Mr. Lanham set up a model kitchen, in addition to the model bathroom he was already showing, in his display windows. The kitchen was in white, showing electric range, hot water stove (they have no gas in Greenwood), enameled table, cabinet and stool. The model bathroom was in color, with harmonizing linoleum on the floor.

"Women are studying," says Miss McGlathery, "and are eagerly grasping any helpful invention whereby they can lessen their duties in domestic work. The mother needs every minute of the day to properly train her children. And the mother who has to work with out-of-date plumbing and heating equipment hasn't the time. Give the mother of the family an opportunity to get her work done with a minimum of drudgery—and she can get through her work with modern plumbing equipment without fatiguing herself completely—and she will have time for what these advertisements refer to as her big job—her children.

"All this," she adds, "can be found at Lanham's."

Readers of DOMESTIC ENGINEERING will remember that some time ago we carried a story about Mr. Lanham to show how effectively he was meeting mail order competition.

On these two pages are four DOMESTIC ENGINEERING *ads used by Mr. Lanham*



Radiator Heat

—more homes realized its need during the winter

Where was the comfort in heating this year? In homes heated by radiators. No rooms cold, no matter how far removed from the heating plant. Controlled heat that meant a warm house in the morning with an extra half-hour's sleep at least. Efficient because scientific, radiator heat is the only heat which can claim to be truly modern. If you had anything but real comfort from your heating plant this winter, we would be glad to have an opportunity to talk the problem over with you. Just telephone,

J. D. LANHAM
—PHONE 55—

Drudgery Free!

The great product of home life is happy, intelligent children, capable of enjoying life and of taking up its duties with courage and ability. But that means a need for constant help from the intelligent mother. And the mother who has to work with out-of-date plumbing and heating equipment hasn't the time. Give the mother of the family the automatic water heater, the scientifically built kitchen sink, convenient bathroom equipment and automatic control for the heating plant—then she'll have time for her big job—her children.

J. D. LANHAM
—PHONE 55—

The Master Salesman

—In this story, the Master Salesman analyzes the methods of a successful contractor working on a "lead"

WE have been in business over forty years, and one of our most rigid rules is—"treat our customers right." With us that means,—don't sacrifice a customer's interest by cheapening his job just for the sake of getting it.

Early this year, we learned of a certain bank official about to build a residence in the Heights section. Since we have specialized on private residence work, we set about landing the contract for plumbing and heating.

We made some inquiries among our friendly patrons, and finally located one who was already living in the vicinity of where he was going to build.

I asked him if it would embarrass him to call this party on the 'phone and arrange for me to have a conference with him. He agreed to this and I had my meeting that afternoon. When I got to his office and introduced myself, he said: "Oh yes, Mr. Brown, my friend, spoke very highly of you, and I had intended having you bid on the work. The architect has the plans and specifications completed; if you would like to have them, I'll give you a note to him." To this I replied, "I appreciate that very much, Mr. Whitcomb. I'll stop and pick them up, but before going, I want to tell you something about ourselves, our methods and what we will strive to do for you." Then I told him a bit of the history of our company. How we valued the service our work gave our customers after installation, as the first asset of our business. I gave him the names of owners of years ago, down to date, drawing attention to the fact that some of them came to us because we had satisfied their parents.

It developed that he already knew quite a bit of this and was ready to believe what I said. Finally, as I left him, I asked him one question that started the ball rolling for our preference on the work. "Mr. Whitcomb," I asked, "within reason, are you interested in getting the best material and work for long service, or is it possible that you will give out your contract on a competitively price basis?" "Oh! I don't want any speculation job. This is my home, you know, and I want the work done right and the right kind of material used, absolutely." "That is the only kind of work we do, you know; evidently you appreciate the difference and of course understand how impossible it is for us to compete against cheaper material and indifferent quality of workmanship. We must naturally be quite some higher in our cost than those who do cheaper work."

"Yes, I understand all that," he replied. "You go ahead and figure the work, and I'll not be unreasonable." With these promises from him, I left and returned to my office. Then I explained the entire interview to our estimator. Several days later, we sat together for almost an entire morning, going over the plans and specifications, and what he had deduced from the architect's layout. On the top floor, we saw that syphon jet combinations, built in baths and showers were specified. Likewise in the chauffeur's and gardener's apartments over the garage were specified the same, but no shower; the place where the latter was most needed. We noted that. In the master bath rooms on the second floor, there were built-in and tiled showers. We planned on recommending cabinet showers with plate glass sides and chromium plated frame. No refrigerator was mentioned. We recorded an "iceless" to go there.

When all these points were carefully gone over and we felt we had utilized our best knowledge in creating a most modern equipment, we prepared our figures—as specified, and also wrote up a new specification the way we wanted to recommend the job to be done; our estimate on this plan was made out for the complete job so that the total cost both ways could be of record individually and not with the changes as extras. Owners don't like extras.

Then I took the first estimate, and previously 'phoning, arranged to meet the architect at the owner's office. When we got together, I handed them my first estimate and explained that we had followed the specifications fully. No criticism was offered on the price I had submitted, but a general discussion of the proposed house developed. I had hoped this would occur and so encouraged it. Finally we got to the point of questioning some parts of the layout and fixtures, and it gave me an opening.

I said, "Gentlemen, I wonder if you would like me to make a few suggestions on this work. There are some features in it that I believe will put your money where it will be most appreciated. Both the use of some later models of equipment that I know of, and changing the garage and third floor specifications slightly will give more effective results. If it is of any value, I'll make my suggestions." Immediately the architect concurred without argument. The owner said, "Well, what are they?" I outlined them, but explained they would have to be laid down in a general letter of suggestions accompanied by cuts of the fixtures we had in mind. It would be best to arrange an hour the following day to go over the matter. This was agreed to, and we adjourned till the following day.

Our bid number two was all ready for them, but before going to the second conference, I 'phoned the architect and asked him to see me at his office first. I showed him the new specification and he agreed to the better advantages of our ideas. Then I asked him if he would like to submit the changes as his ideas. That pleased him, and he said he thought it a good plan for the owner to think he had at least had something to do with it.

We went over the whole proposi-

tion in detail, and excepting a few minor changes, it was approved. Then I handed them my figures. They looked them over and finally the owner said, "Well, I think we'd better give Mr. Brown this contract without bothering any further."

That closed the deal and I was standing, about to leave; the owner said to me, "Mr. Brown, will you make any money on that job?" "Why of course I will, Mr. Whitcomb," I replied. "Well," he said, "I don't want you to work for nothing."

The job was installed under our most careful supervision, and he is one of our best friends.—As his friend recommended us to him, he has already done in turn with several of his friends. It pays to build a reputation for good work and then live up to it.

Analysis

Take this recital of a successful Master Plumber and analyze it by paragraph.

In the first paragraph good use was made of the length of time in business backing up a slogan "Treat Our Customers Right," and keeping old customers and their families and friends as customers also.

Paragraphs three, four, five and six:—Evidently this Master Plumber keeps constantly in personal touch with his customers. In this instance, he gathered in information about a new home to be built. He might have lost that contract had he waited for business to come in, or not followed up his regular patrons with regular visits. Then he follows up the lead obtained from his friendly customer, calls on the prospect, gets acquainted, tells him something about his company, its service, and who it served. It is well to very closely analyze that fifth paragraph. Note how carefully he felt his way into the confidence of the customer, finally reaching the crucial stage of fixing that customer's mind on the fact that his price would be neither competitive nor cheap.

Paragraphs seven and eight:—Shows the customer satisfied with the dependability of the Plumber. Again the "reputation" played its part in winning confidence. The actual building up of a real job was on its way. Those plans were not merely figured—they were studied and considered as carefully as though the home were for the plumber or estimator instead of a customer.

Paragraphs nine and ten:—Exceedingly good tact was exercised in co-ordinating with the architect, having him in the conference when the bid was offered. It was real salesmanship to let the conversation develop the subject of improvements in the present plans. Tactfully the Master Plumber suggested that he had some ideas he would like to present for consideration, and with the opportunity granted, he launched on a real sales campaign to sell better and more fixtures than had been previously provided. His courteous consideration of the architect won his co-operation immediately, and where the point of detailing these changes was reached, the Master Plumber used sales skill again in not showing his second bid. All through the transaction, it was the master mind of the Plumber that dominated these conferences, but with the feeling in the mind of the owner and architect that they were making the decisions. That was excellent negative selling.

Paragraph twelve reads like a fairy tale, but we all know how true it is. When a customer is really convinced he is dealing with one he can trust, he has no desire to see him lose money. In this instance his confidence was so enthusiastic that he felt obligated to offer to protect the Plumber against a loss through error in calculation or otherwise.

If

you have ever made *a difficult sale*
you have ever lost *a difficult sale*
you are faced now *with a difficult sales situation*

Write The Master Salesman!

You may have made a successful sale which was particularly difficult. Tell the whole story of it to "The Master Salesman," so that he may include it in his department and point out why it was successful. That will help others.

You may have lost a difficult sale. Perhaps you do not know why you lost it. Perhaps you have wondered what you might have done in order to secure the order. Send the story to "The Master Salesman," in detail, and he will tell you why you lost the sale and how you might have saved it.

You may be faced with a difficult sales situation right now. Write the details to "The Master Salesman" and he will advise you what course to pursue in order to make the sale.

He will welcome any letters reciting your sales experiences.

Combination House and Fire Tanks

By HAROLD L. ALT

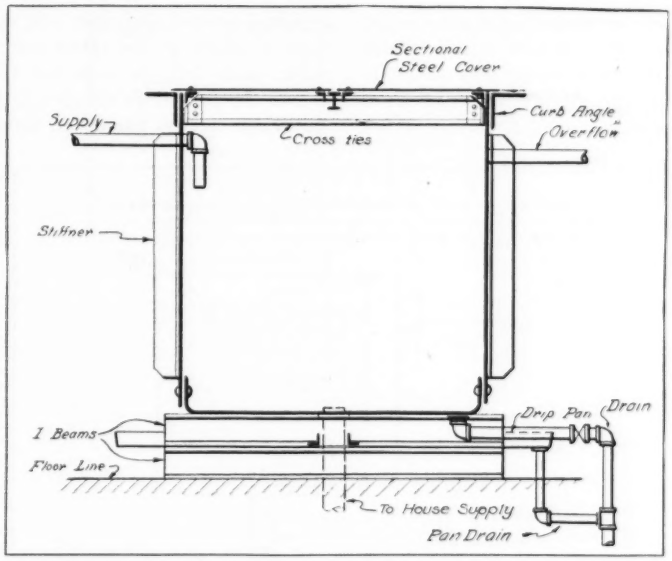


Fig. 1.—Pipe connections for typical tank used for house service only

BOTH the house tank and the fire tank have the same purpose, namely to store a certain quantity of water until it is required. But the water held in each is for entirely different purposes. Whereas the house tank is used to furnish water to the plumbing fixtures and for general house use, the fire tank will supply the fire standpipes to which the fire hoses are connected, or a system of automatic sprinklers, or both.

Discussions have appeared in these pages, from time to time, on the desirability or undesirability of house tanks; for the purpose of this article, however, it will be assumed that the ayes have it, and that it definitely has been decided that a house tank is necessary. Also that a fire tank is likewise to be installed.

Dangers of Combination Tanks

For many years it was the custom to use a separate tank for each purpose, which involved considerable more expense than if one single tank were employed. The objection to the use of a single tank was based, of course, on the danger of emptying the tank by drawing off the water through the house fixtures. This danger was always present as any failure in the supply of water to the tank would cause it to become dry as soon as the building had drawn off all of the water which the tank contained at the time of failure.

Should a fire break out when the tank was empty or even nearly empty there would be practically no water available for fighting the fire and all the fire protection equipment in the building which depends upon water for its functioning, would be out of commission.

There are ways, however, in which one combined tank may be used with absolute assurance that the quantity of water necessary as a fire reserve always will be retained in the tank. This is done by separating the tank into portions or sections by intangible lines (not by partitions) and then arranging the piping so that the water in each imaginary section of the tank is stored for its particular purpose and cannot be drawn off, accidentally leaving no fire protection.

Simple House Tank Connections

Piping connections for a typical house tank intended for house service only are indicated in Fig. 1. Here it will be seen that the ordinary house tank should have a supply pipe, drain pipe, pipe to house, overflow, and a drip pan drain. The tank drain and the tank overflow may be connected to the same pipe which is usually spilled out on the roof but the drip pan drain should only be connected to the tank drain line (if at all) at a point considerably below the level of the pan so as to prevent water from the tank drain backing up into the pan whenever the tank is drained.

House Tank with Only Single Connection

Whenever it is important to reduce the number of tappings on a house tank, this can be done to any limit so long as one connection is retained. In other words, by a proper arrangement of piping one flange on the house tank can be made to serve as an inlet, outlet, overflow, and drain. When this is done, the single connection must be at or near the bottom of the tank and it must be large enough to serve the largest line which is to be connected to the tank.

A method of connecting up a house tank with one pipe connection is shown in Fig. 2 and it will be noted that this tapping is placed in the bottom of the tank and the house supply is carried directly down from this connection with a valve to control the house supply. Between this main valve and the tank, however, is cut in a tee to which is connected the tank supply line and from the branch for the supply a drain and overflow is run. The overflow is constructed by by-passing the drain valve with a by-pass having the high portion at the level of the water line which it is desired to maintain in the tank and with a vent on this high portion to prevent siphonic action.

With this arrangement, the tank can be drained through the drain valve, but when this valve is closed, any lift of the water line above the top of the by-pass loop will result in water passing over the top of the

by-pass and overflowing out through the drain connection.

Piping for Combination Tanks

When tanks for fire service and house service are combined, great care must be exercised in the matter of piping, and the aim of every connection made to such a tank, and every pipe run from it, is to preserve the fire reserve intact against any and all contingencies, except that of fire, and to assure that (in the event of a fire starting) the full fire reserve will be immediately available.

This is made possible by placing the house supply in the top of the tank and the fire reserve in the bottom, and connecting the house supply line part of the way up the side of the tank so that water below this level cannot be drawn out for house service, and the water for fire protection will be retained in the bottom of the tank until the fire line running from the bottom is opened, thus allowing this water to be drawn upon.

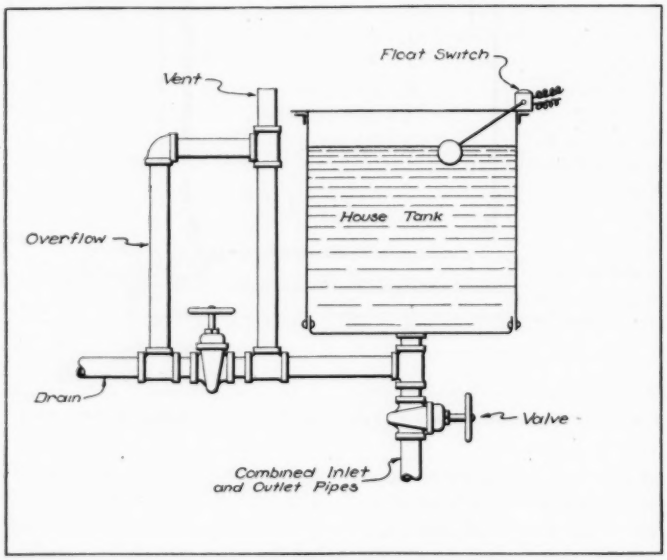


Fig. 2.—How a house tank can be connected up with the use of only one tapping

There are certain advantages in the use of combination tanks over and above the item of cost. Among these might be mentioned that the house line gets better water (that is, with less sediment which settles down into the fire portion of the tank) and the fact that when the tank is properly filled for house service there is available for fire use, not only the fire reserve water, but also the house reserve water. In the ordinary house tank, with a bottom connection, it is customary to put a collar anywhere from 1 inch to 2 inches high around the outlet to prevent sediment getting down into the house line.

In a fire line, a little sediment is not a serious factor, as no one cares if the water is discolored when it is thrown on the fire. The end of the fire line is an open end so that a small amount of sediment would not cause the trouble in this line which it would in the house line with ball cocks, flush valves and faucets.

Calculating the Size of Combination Tanks

In building a combination house-and-fire tank, care must be taken to tap off the house supply at exactly the right level and to ascertain at just what height, on the tank, this level will come requires a little computation.

Suppose there is a penthouse 15 ft. wide by 20 ft. long and that it is desired to store 5000 gallons of water for fire and 3000 gallons for house service in a combination tank. How high would the house service connection be on the tank, and what must be the height of the pent house?

Assuming that the drip pan would be 12 inches wider than the tank all around, and that about 18 inches is required around the sides and one end of the pan with 4 ft. 6 inches at the other end for valves and connections, space left for tank for 15 ft. direction would be

15 ft. — 2 ft. 6 in. — 2 ft. 6 in. = 10 ft.

for width, and in the 20 ft. direction, the length will be

20 ft. — 2 ft. 6 in. — 4 ft. 6 in. = 13 ft.

for length.

It will now be seen that the tank will have an area of

13 ft. × 10 ft. = 130 sq. ft.

The next thing to determine is the number of cubic ft. of storage space required for each portion of the water reserve. As the fire storage is 5000 gallons and as there are about 7½ gallons per cubic ft., the number of cubic ft. required for fire storage will be

5000 ÷ 7½ = 667 cu. ft.

and, as the house storage is 3000 gallons, the number of cubic ft. required for the house will be

3000 ÷ 7½ = 400 cubic ft.

and the total amount of water to be contained in the tank in cubic ft. will be the sum of these two amounts, or

667 cubic ft. + 400 cubic ft. = 1067 cubic ft.

Consequently the height of the water line of the tank above the bottom in order to contain this 1067 cubic ft. of water and when the area of the bottom is 130 sq. ft. will be

1067 cubic ft. ÷ 130 sq. ft. = 8.2 ft.

or about 8 ft. 3 inches. But the sides of the tank are usually extended 12 inches above the water line, so that the height of the tank would be

8 ft. 3 inches + 12 inches = 9 ft. 3 inches.

If the tank is supported on 12-inch I beams sitting in the pan and the pan in turn is supported on a second set of 12-inch I beams, then there must be about 2 ft. 0 inch under the tank, and to get access into the top requires about 2 ft. over the tank, so that the total height of the penthouse would be not less than

9 ft. 3 inches + 2 ft. + 2 ft. = 13 ft. 3 inches.

In this case the penthouse would probably be built with 14 ft. of clear height.

To obtain the height at which the house supply should be connected, the theoretical water line of the fire reserve must be determined and the invert of the house supply line located at this level. Invert is a short way of saying the "inside of the bottom of the pipe." With

(Continued on Page 118)

Relief Vent Prevents Siphonage

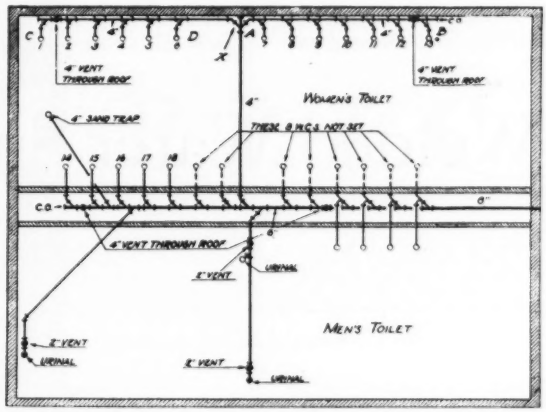


Fig. 1.—Floor plan of toilet room in the stadium of a large university

By R. M. STARBUCK, JR.

IF YOU will refer to an article on page 80 of the July 13 issue of DOMESTIC ENGINEERING, you will find that it deals with an interesting problem of failure of several large toilet rooms serving the stadium of one of our large universities. The subject is an interesting one, and it will pay you to look back to that issue.

The problem has attracted the attention of Joseph E. Francis, plumbing inspector of Oakland, Calif., who has written us as follows:

"With reference to an article in the July 13 issue of your magazine, page 80, Fig. 1, a 4-inch vent installed at the intersection of A, B, C and D, will act to break siphonic action, and will also act as a relief vent for the water closets.

"This is regulated by our ordinance, and has been installed in several school buildings and public places, for a battery installation. This relief vent can be backvented into either end of the battery run, or be made a main vent and receive the end vent.

"Batteries of toilets over eight in number must be provided with a 4-inch branch vent, so that if there are ten, twelve or fourteen, those over eight can be backvented independently, or have a 4-inch vent in the center and one at each end."

The section in the Oakland plumbing code to which allusion is made, is the following:

Oakland, Calif., Plumbing Code Provisions

"Batteries of fixtures shall be installed as follows: Waste or soil pipe lines shall have a fall not greater than one-quarter inch to one foot, within the limits of the required vent pipes.

"Vent pipes for such batteries shall be of same size of pipe as the soil or waste pipe served, and shall be installed, one at the high end of such waste or soil pipe after the opening for the first fixture, and one beyond the opening for the last fixture in such waste or soil pipe line. Not more than eight fixtures will be permitted between the limits of any such vent pipes. An exposed cleanout shall be installed at the high point of such waste or soil pipe line, and additional cleanouts shall be installed in such waste or soil pipe lines each thirty-five feet of their length."

We reproduce the original floor plan in our present Fig. 1.

As we understand it, the suggestion that a 4-inch relief pipe be placed at the junction of A, B, C and D lines, is the same suggestion that we made in the original article, when we mentioned such a vent for the point X shown in Fig. 1.

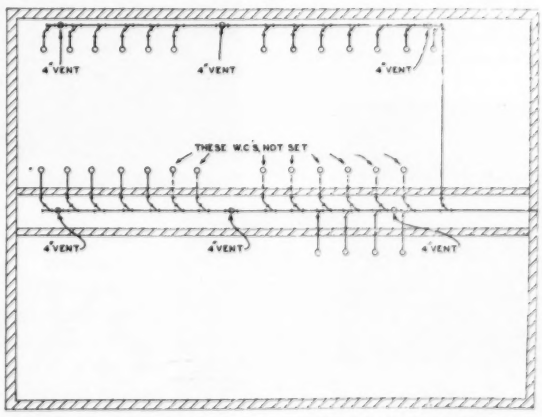


Fig. 2.—Layout suggested by Oakland, Calif., plumbing inspector

With his letter, Mr. Francis also sent a sketch, which we show in Fig. 2, but inasmuch as no comment came with it, we are unable to do more than just present the plan.

If we have interpreted his idea correctly, it would be necessary to reconnect seven of the water closets, as otherwise flow from these fixtures would be in the wrong direction. We think that the arrangement shown in Fig. 2 would be quite an improvement over the original lay-

out, for the added relief vents should help greatly, also the change in the piping layout.

Small Expense Provision Involved

However, the original request for help in solving the problem of the failure of the toilet rooms of the stadium was made with the proviso that the remedy involve as little expense as possible, and our impression is that the changes involved would mean a considerable expense.

We are glad to have these suggestions, and trust that they will be helpful in solving the difficulty encountered in these toilet rooms.

A Bronze-Welded Water Supply Line

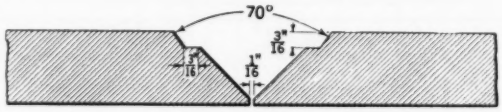


Fig. 1.—Sketch of shear-vee joint

TO SERVE an increasing demand, a roofing paper manufacturing firm in California recently built a new factory building, with a wharf to facilitate deep-water shipping. As a part of this job a piping system was installed along the wharf to supply cooling water from the bay nearby for some of the equipment in the plant. Since the line was to carry salt water, it was deemed advisable to use cast iron pipe so that corrosion would be reduced to a minimum.

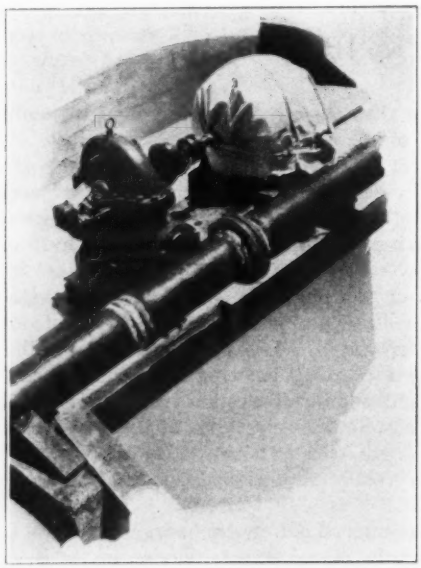


Fig. 2.—Ready to connect pumps

Investigations were made of the cost of installing cast iron pipe with all the various types of joints which might be used. After thoroughly considering the subject, it was decided that cast iron pipe lines with shear-vee type bronze-welded joints should be installed. The job consisted of two lines of 8-inch diameter pipe 100 ft. long. These lines were to operate at a vacuum of 14 inches of mercury.

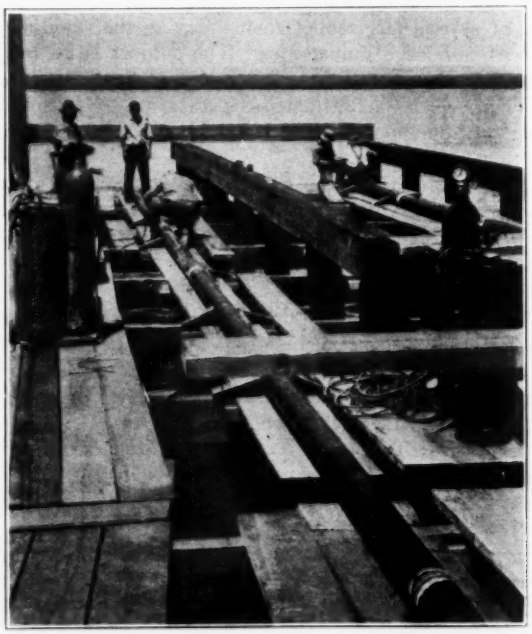


Fig. 4.—Welders completing installation

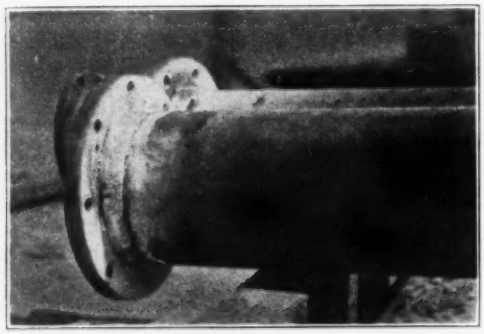


Fig. 3.—Bronze-welded flange for strainer

The pipe was furnished in 12-ft. lengths, and was supplied from the manufacturer with the ends machined according to the dimensions shown in Fig. 1. Before welding, the ends were seared or annealed with the blowpipe by the operators on the job.

The searing mentioned is a new feature of bronze-

(Continued on Page 117)

SIMPLICITY

When Attractive Design means Better Construction, Too!

Have you ever worked with faucets that looked like good fixtures, but were not? Or with faucets that really proved efficient, but looked cheap and weak? If you have, then you know that design is sometimes misleading.

The simplicity of the design of Hays "Excel" Faucets does two things. It makes this faucet an efficient, long-lasting fixture of solid construction; and at the same time, it adds a plain and substantial appearance that is trim and neat in any sink. Note the clean lines of it in the illustration. Only high grade red metal is used, coated with a bright Hays chromium plated finish which does not require polishing. The porcelain soap tray is placed conveniently above, and the center spout swings easily below from right to left. Furnished flanged female or adjustable screw flanged male.

Hays "Excel" Faucets have both the fine appearance and efficient durability that result from simplicity in design and construction. These are features your customers want —these are sales points in your favor. Write for specifications and prices.

HAYS MANUFACTURING CO., ERIE, PA.

HAYS

A HAYS *job is a credit to you*

DOUBLE-SINK FAUCETS

Complete Line of Ground Key and Compression Plumbing Brass Goods from Street to Bath

U. S. Bureau of Mines Laboratories at Pittsburgh, Pa.

Capacity of Radiator Supply Branches for One and Two-Pipe Systems*

By F. C. HOUGHTEN[1], M. E. O'CONNELL[2] and CARL GUTBERLET[3]

A STUDY of the capacity of pipe for various parts of a steam heating system has been under way at the Research Laboratory since 1922, and these data result from a co-operative study by the Society and the Heating and Ventilating Department of the Carnegie Institute of Technology. A number of reports bearing on various phases of the subject have been published from time to time including a complete and final report[4] on the subject of capacity of upfeed steam heating risers for one and two-pipe steam heating systems.

This paper deals with the results of a study of capacity of radiator supply branches for one and two-pipe systems and gives final results on this phase of the study.

There are a number of variable factors entering into the capacity of radiator supply branches all of which must be taken into account in making an analysis of the subject. A typical radiator supply branch from a supply riser is shown in Fig. 1. Its capacity is affected by the pipe fittings, *C* to *D* and *E* to *G*, by the capacity of the vertical section of the branch *FG*, by the valve *G*, and by the pitch of the main section of the branch *DE*. The steam carrying capacity of the branch further depends upon whether the condensation from the radiator returns through this branch (one-pipe system) or through a separate return (two-pipe system). In order to have a clear understanding of the operation of such a branch it was necessary to make an independent study of each of these factors.

Fig. 1 is the laboratory set-up on which the study of supply branches to radiator was made. Steam was taken from the 8-in. main, through the 6-in. branch to the 4-in. supply riser *AB*. The radiator supply branch *CH* on which the study was made supplied steam to a cast iron radiator or water cooled condenser *I*, located on a movable platform so that the length and pitch of *DE* could be changed.

When the branch was operated as a one-pipe system, *J* was closed off and the condensate returned through

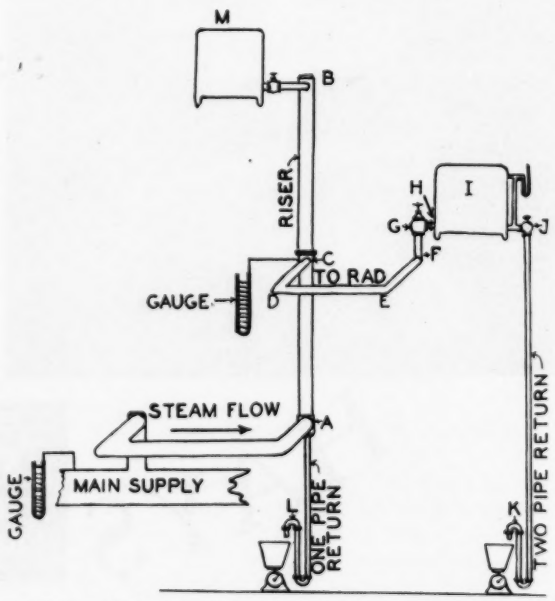


Fig. 1.—Laboratory set-up for studying radiator branches

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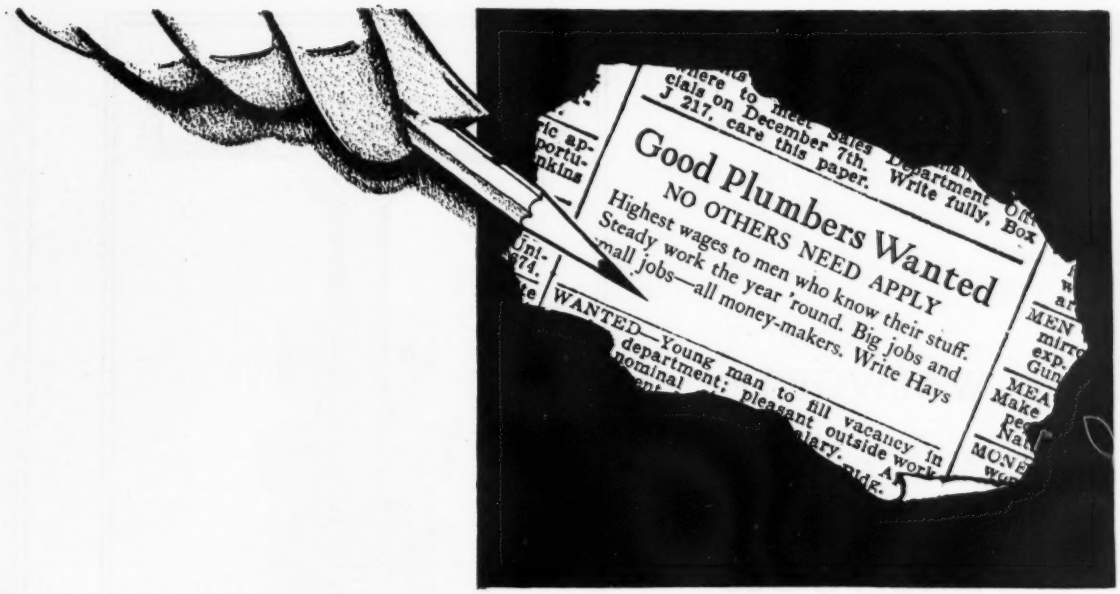
[3] Research Engineer, Research Laboratory, A. S. H. & V. E.

[4] Capacity of Up-Feed Steam Heating Risers for One and Two-Pipe Systems—by F. C. Houghten, and M. E. O'Connell. Trans. American Society of Heating and Ventilating Engineers, 1927, Vol. 33.

*Presented at the Semi-Annual Meeting of the American Society of Heating and Ventilating Engineers, Ontario, June, 1929.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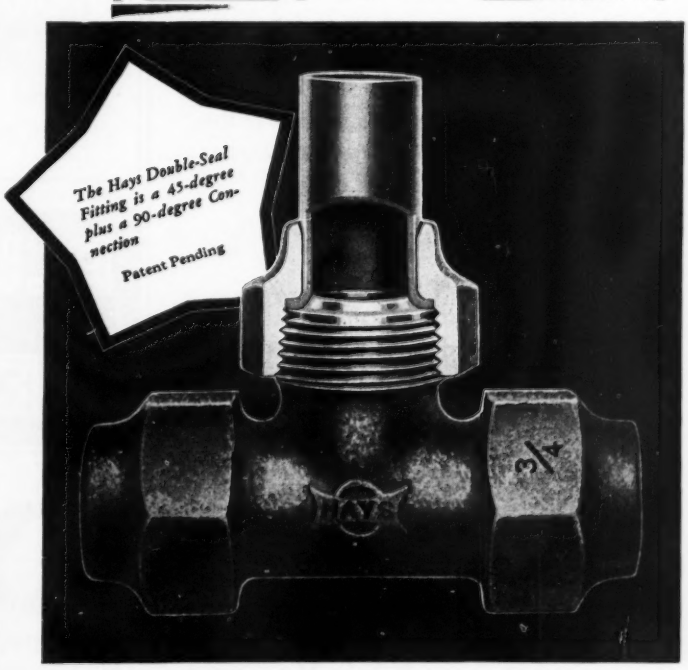

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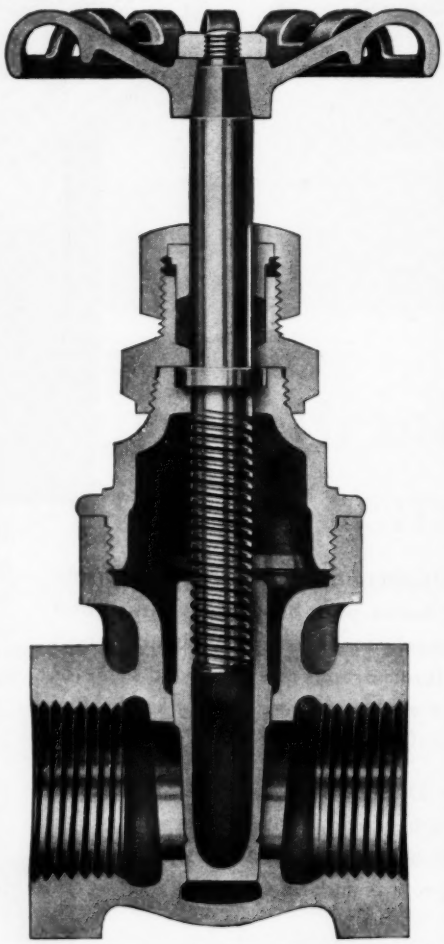

FIG. 225M SECTIONAL

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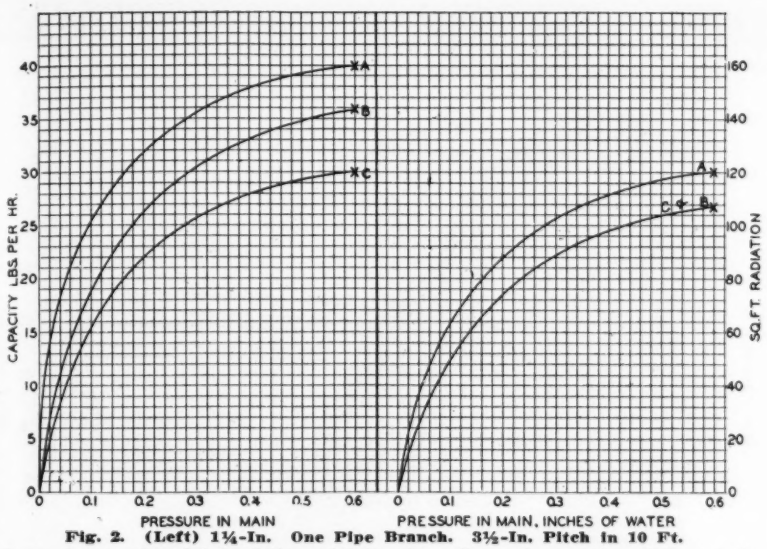


Fig. 2. (Left) 1¼-In. One Pipe Branch. 3½-In. Pitch in 10 Ft.
Curve A, no valve, 1½-in. fittings, 1¼-in. pipe. Curve B, no valve, fittings and pipe, 1¼-in. Nominal size. Curve C, valve, fittings and pipe, 1¼-in., nominal size

Fig 3. (Right) 1¼-In. One-Pipe Branch. I-In. Pitch in 10 Ft.
Curve A, no valve, 1½-in. fittings, 1¼-in. pipe. Curve B, no valve, fittings and pipe, 1¼-in., nominal size. Curve C, valve, fittings and pipe, 1¼-in., nominal size

the radiator supply branch and riser and collected and weighed at *L*. When operating as a two-pipe system *J* was opened and the condensate from the radiator was returned through the return riser and weighed at *K*.

In order to observe any effect which steam passing on up the riser beyond *C* had on the operation of the branch and radiator under study, a second radiator or condenser, *M*, was supplied steam during a part of the study. It was soon found that steam passing on up the riser beyond *C* did not affect the operation of the branch *CH* unless the riser *AC* was loaded beyond the maximum capacity recommended for use in an earlier laboratory study. After this fact was established the riser was cut beyond *C* and capped.

The condensation in the system other than the branch and radiator studied was determined for all operating conditions. When the branch was operating as a one-pipe system the total condensation collected at *L* was reduced by this amount in order to determine the steam and condensation carried by the branch.

Steam pressures were observed in the main, riser, and radiator and a water column was provided to give the level of any water which might be held up in radiator.

Results

In attacking the problem the relation between steam pressure in the main or the riser and the capacity of the branch as a whole, for any given set of conditions, considering the variables mentioned, was determined and the results plotted in the form of a curve such as *A*, *B*, or *C*, Figs. 2 or 3. These curves are similar to

Fig. 4. One-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.
Curve A, no valve, 1½-in. fittings, 1¼-in. pipe. Curve B, no valve, fittings and pipe 1¼-in., nominal size. Curve C, valve, fittings and pipe 1¼-in. nominal size. Curves A, B and C, maximum capacities with noise. Curves D and E, maximum capacities without noise.

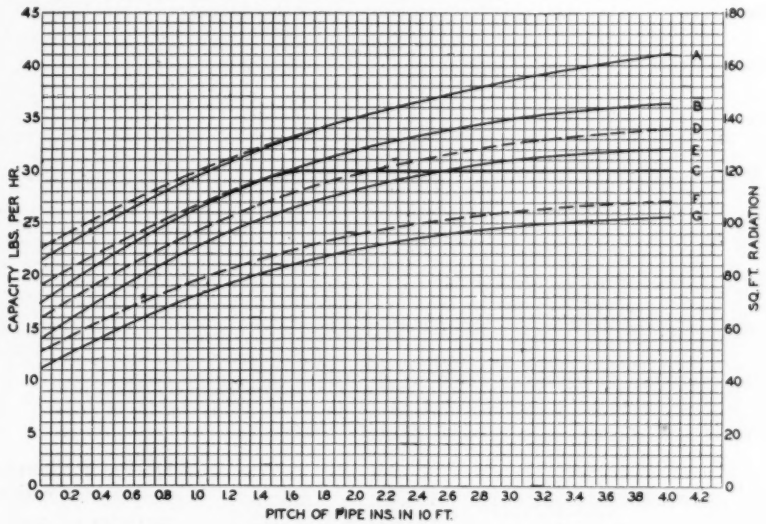
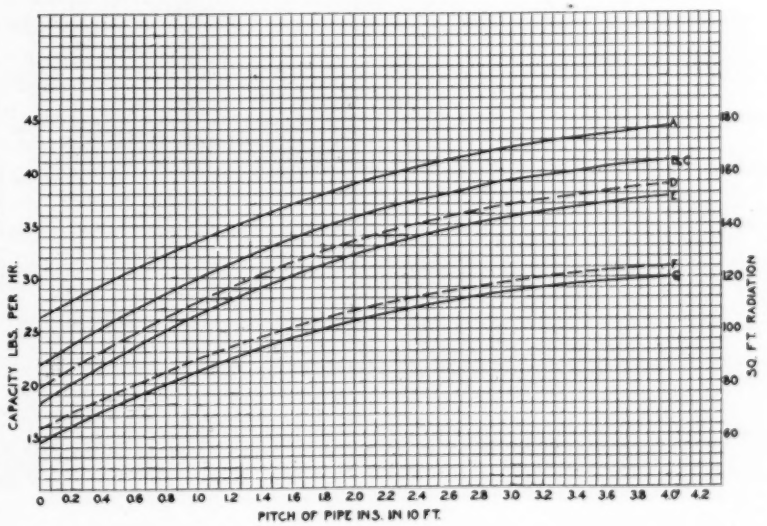


Fig. 5. Two-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.
Curve A, no valve, 1½-in. fittings, 1¼-in. pipe. Curve B, no valve, fittings and pipe 1¼-in., nominal size. Curve C, valve, fittings, and pipe 1¼-in., nominal size. Curves A, B and C, maximum capacities with noise. Curves D and E, maximum capacities without noise. Curves F and G 80 per cent of maximum capacities with no noise



curves showing this relationship in other laboratory publications. In further analysis of the results the maximum capacity, or the highest point x, reached on any particular curve for a given branch was taken as the capacity of that branch. Data for such a curve were collected and the curve plotted in order to obtain this maximum point for each of the many variable conditions on which information was desired.

Point x on Curve *C*, Fig. 2, is the maximum capacity of a 1¼-in. branch similar to Fig. 1 in which all fittings, pipe, and angle valve were of 1¼-in. nominal size and with a pitch in section *DE* of 3.5 in 10 ft. Point x on curve *C*, Fig. 3 gives the maximum capacity of the same branch with a pitch of 1-in. in 10 ft. Curve *C*, Fig. 4, shows the variation in maximum capacity of this branch with pitch.

The valve used in the branch giving the results shown by Curve *C*, Figs. 2, 3 and 4 was a standard 1¼-in. angle valve. It was found that this valve and in fact, most valves studied, had a seat opening just 1¼-in. in diameter instead of 1.38 in. in diameter which is the actual internal diameter of nominal 1¼-in. pipe. Another series of data was collected giving curves *B*, Figs. 2, 3, and 4 in which the radiator connection was the same as that giving curves *C*, excepting that the 1¼-in. valve was replaced by a 1¼-in. ell. It was later shown that the same increase in capacity could be had by drilling out the seat of the valve to a diameter equal to that of the same nominal size pipe or by replacing the valve by one of the next larger size.

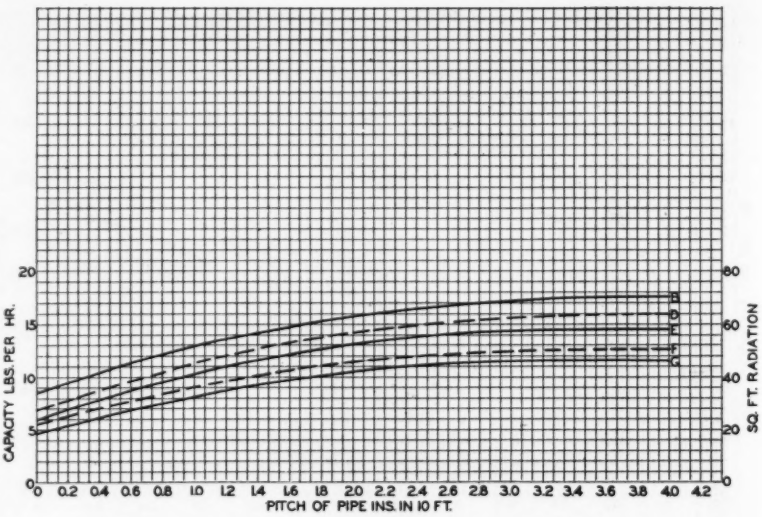


Fig. 6. One-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.
Curve B, no valve, fittings and pipe 1-in., nominal size, maximum capacities with noise. Curves D and E, maximum capacities without noise. Curves F and G, 80 per cent of maximum capacities with no noise

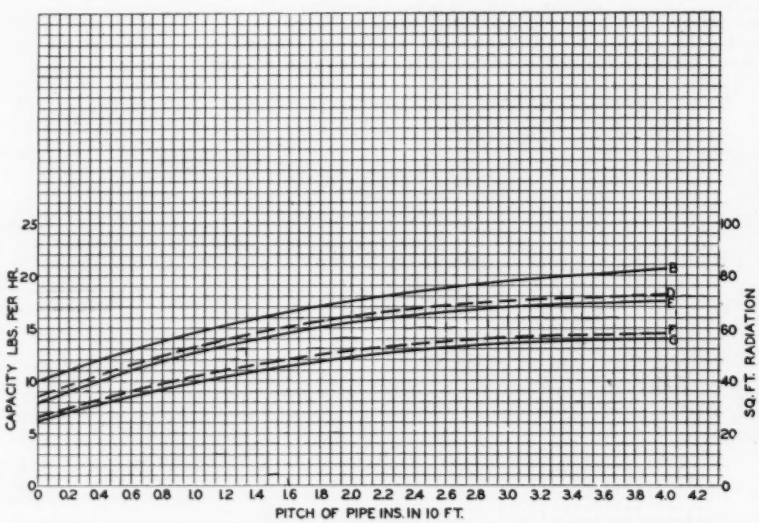


Fig. 7. Two-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.
Curve B, no valve, fittings and pipe 1-in., nominal size, maximum capacities with noise. Curves D and E, maximum capacities without noise. Curves F and G, 80 per cent of maximum capacities with no noise

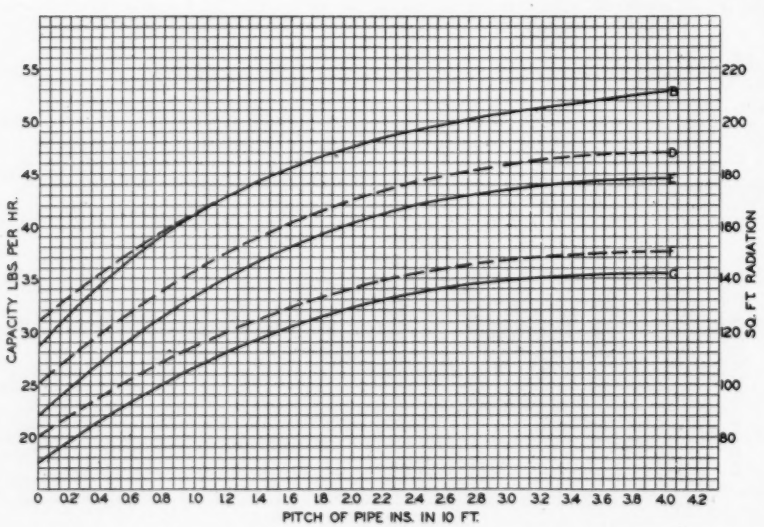


Fig. 8. One-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.
Curve B, no valve, fittings and pipe 1½-in., nominal size, maximum capacities with noise. Curves D and E, maximum capacities without noise. Curves F and G, 80 per cent of maximum capacities with no noise

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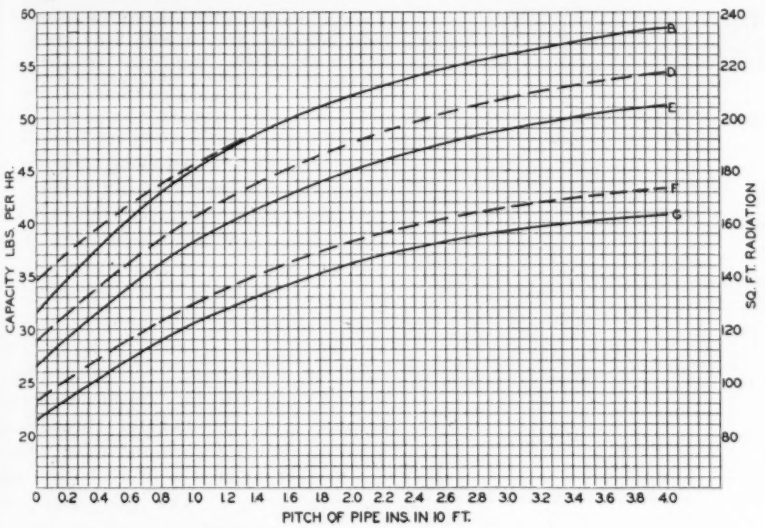
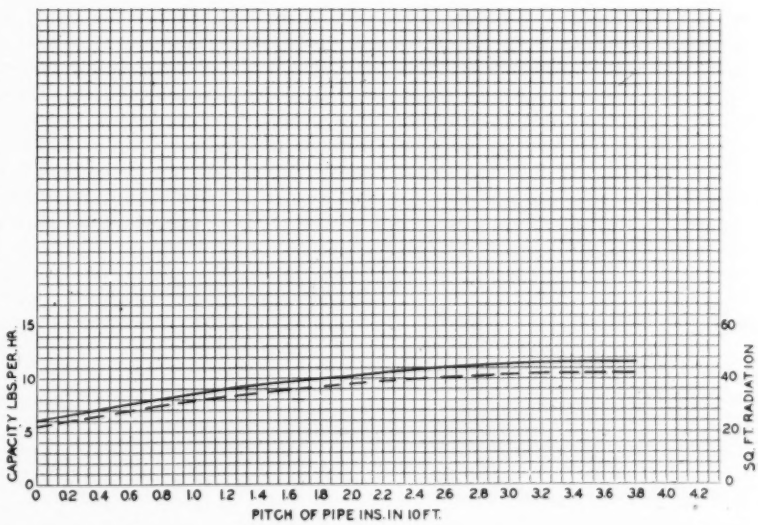


Fig. 9. Two Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.
Curve B, no valve, fittings and pipe 1½-in. size, maximum capacities with noise. Curves D and E maximum capacities without noise. Curves F and G, 80 per cent of maximum capacities with no noise

Fig. 10. One and Two-Pipe Branch
Solid line 5 ft. Two-pipe, no valve, fitting and pipe, ¾-in. nominal size. Broken line 5 ft. one-pipe, no valve, fitting and pipe ¾-in. nominal size. Both curves are for maximum capacity with noise

The data given in Curves *A*, Figs. 2, 3, and 4 were obtained on a similar branch with 1½-in. fittings replacing the 1¼-in. fittings at *CD* and *EG*, Fig. 1. It was further shown that replacing the fittings at either *CD* or EG alone with the larger size gave the same curves as *B*. Hence it is clear that the capacity shown by *C*, *B*, and *A* in Figs. 2, 3, and 4 are, respectively, the limiting capacities of the horizontal branch alone, the fittings and the valve, of the same nominal size.



Comparison of curves *C* and *B*, Fig. 4, shows that the maximum capacity of the valve was equal to that of the branch with a pitch of 1.58 in. in 10 ft. For greater pitches of the main section of the branch the valve restricted the flow, whereas for smaller pitches the section *DE* of the branch limited the flow.

The data just referred to are all for a 10 ft. branch with one-pipe connection (that is for a branch where the

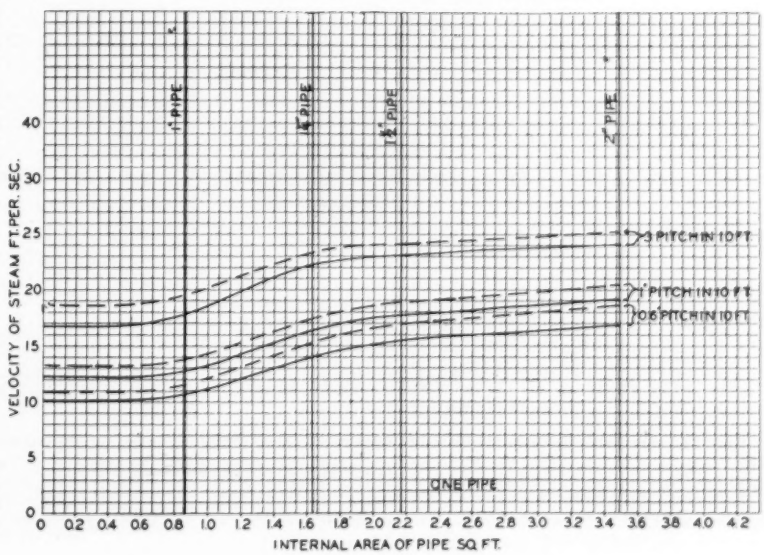


Fig 11. Variation of velocity of steam in a one-pipe branch with pipe area, length and pitch. No noise. Solid line curves 10 ft. branches. Broken line curves 5 ft. branches

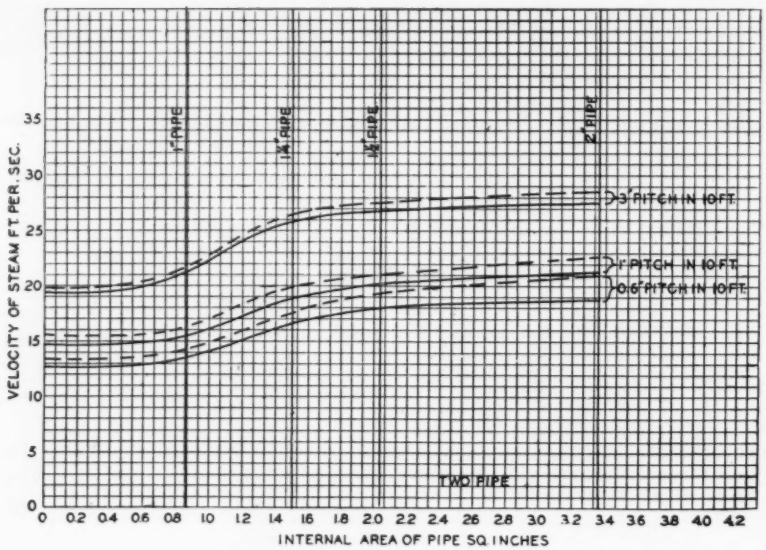


Fig. 12. Variation of velocity of steam in a two-pipe branch with pipe area, length and pitch. No noise. Solid line curves 10 ft. Broken line curves 5 ft. branches

condensation from the radiator returns through the supply branch) and they were collected on a set-up where a water-cooled condenser was used to condense the steam, rather than a radiator. With this set-up small noises due to overloaded branches could not be detected easily because of the noise of the water flowing through the condenser and also due to the fact that the small steam condensing space of the condenser did not seem to give the same reverberation to the sound as was experienced with a standard cast iron radiator. The curves *D* and *E*, Fig. 4 give the maximum capacities obtainable with steam condensed in a cast iron column radiator instead of a water-cooled condenser and with the system operating without audible sound. Curves *A*, *B*, *C*, *D*, and *E*, Fig. 5, give data for a two-pipe radiator connection (that is with the condensation returning from the radiator through a separate return branch and riser, similar to that shown in Fig. 4 for the one-pipe branch. For this condition it will be noted that there is no difference between maximum capacity obtainable with a valve of the same nominal diameter as the pipe (Curves *B* and *C*.) This is accounted for by the fact that in the two-pipe connection of the type shown in Fig. 1, no condensation returns through the valve. All the steam that condenses beyond the valve returns through the radiator while that condensing below the valve returns through the supply branch and riser. In this system a valve with a small seat will not result in

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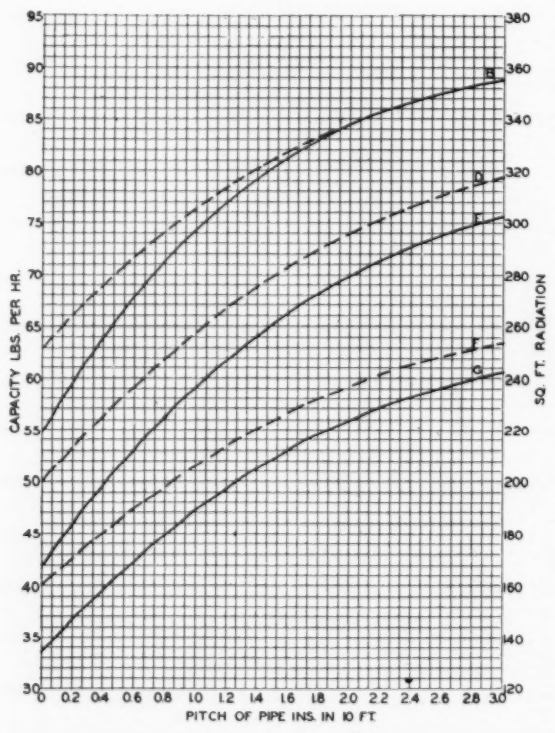

Fig. 13. One-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.

Curve B, no valve, fittings and pipe, 2-in., nominal size, maximum capacities with noise. Curves D and E, maximum capacities without noise. Curves F and G, 80 per cent of maximum capacities with no noise

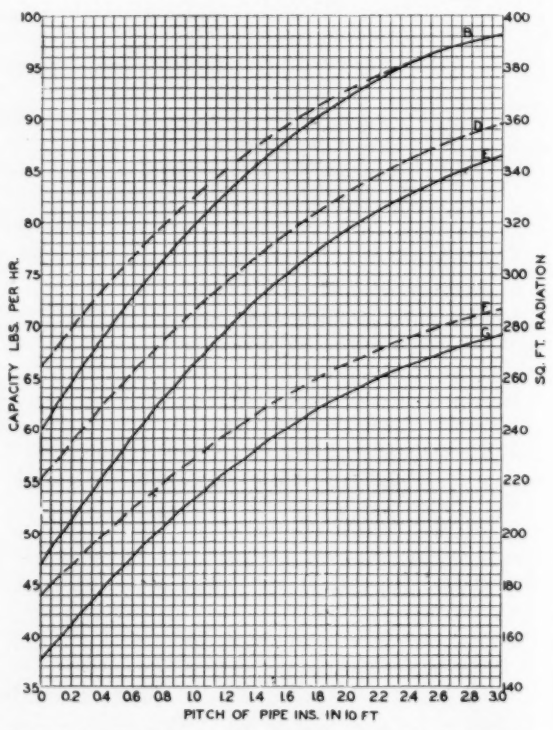

Fig. 14. Two-Pipe Branch. Solid Line 10 Ft. Broken Line 5 Ft.

Curve B, no valve, fittings and pipe, 2-in., nominal size, maximum capacities with noise. Curves D and E, maximum capacities without noise. Curves F and G, 80 per cent of maximum capacities with no noise

This tabulation is the fourth in a program designed to give the plumbing industry a concise source of information on codes

Plumbing Code Tabulations

By R. M. STARBUCK, JR.

Article No. 4

IN THE preceding article we stressed the importance of education. Again in this present connection, we reiterate that in our opinion, the increased intelligence demanded of the plumber is going to be answered in years to come in making the young plumber seek a much better education than he averages to get in this present day and generation.

Many a young chap is so intent on becoming a plumber that he turns his back on education even before he is through with the grammar grades, and starts in handicapped at the very outset by lack of adequate education. More often than not, the parents of such a boy are more to blame than the boy. For the boy's own good, they should insist that he keep on with his schooling as far as it is possible to keep him in line. Such a course will bring the boy a rich reward.

Discussion of Tabulation

Now we will turn our attention to the consideration of our tabulations.

In every detail that goes into the framing of a plumbing code, there seems to be an unexplainable lack of definite statements. This is true not only of the sections of a code that deal strictly with plumbing practice, but of those sections that deal with the organization and administration of municipal plumbing departments. In some instances it was almost impossible to decide from the code whether it was necessary for an applicant for plumber's license to undergo an examination or not.

Plumbing codes often have to stand legal attacks, and it certainly goes without saying, that at every point the statements they contain should be exact, and as far as possible cover every point that may be brought against them.

No doubt there will be found many instances where these tabulations do not tell the truth. When this result occurs, we trust that it will be understood that such errors are not deliberate on our part,—that we have striven to give the information as we found it. Such errors may easily occur and from a variety of reasons.

The first column covers the subject of license, registration, examination, etc.

It is impossible in such a tabulation to do the subject justice.

Where registration only is required, it would seem that least attention was being paid to regulation of the practice of plumbing. When it requires only a man's personal signature made in a book kept at the city hall, to make him a full-fledged master plumber, it would seem that regulation in this direction amounted to little.

Posting of Bond and Fee Good Practice

The next step in the right direction is the requiring of a license before embarking in the plumbing business.

The table will show that often when a man is required to have a license, he cannot procure it until he has posted a bond or paid a license fee, or both. These requirements certainly are in the right direction, according to our judgment.

But it is not until the prospective employer is required to undergo a rigid examination that the machinery of regulation begins to be properly built.

We would not think of employing a physician or a dentist or a lawyer, or a public accountant who had not demonstrated his right to practice by standing and passing a rigid examination.

Our tabulation is chiefly confined to those things that concern the plumbing contractor, but in the matter of examination the journeyman should also be included on the same terms as the master.

It will be a cause for gratitude that our tabulation shows such a large majority of municipalities now insisting on the passing of an examination for both master and journeyman.

There seems to be no particular section of the country that is more lacking in this respect than any other.

Among the large states, New Jersey seems somewhat in need of strengthening its regulations concerning examination. Strenuous efforts are under way in that state to better this condition, and we look to see a state law enacted that will straighten out this situation.

The practice in the state of New York covers the examination of masters only. We believe that the inclusion of journeymen would greatly benefit conditions. If there are counter arguments we are unaware of them.

The state of Washington also seems somewhat backward respecting this regulation.

Canada does not appear to have advanced in this respect to the same extent that a large part of our country has, although a number of her cities require the examining of both branches of the trade. Three of the Canadian cities show "license implied." This means that the code makes no demand for licensing, but the text in some other part of the code makes a passing allusion to the subject.

Examinations Should Be Thorough

There are examinations and examinations, and we strongly suspect that some cities requiring examination are not getting the benefit that is supposed to come from such a requirement, owing to the slack manner in which the examination is given. An examination by the plumbing inspector for instance,

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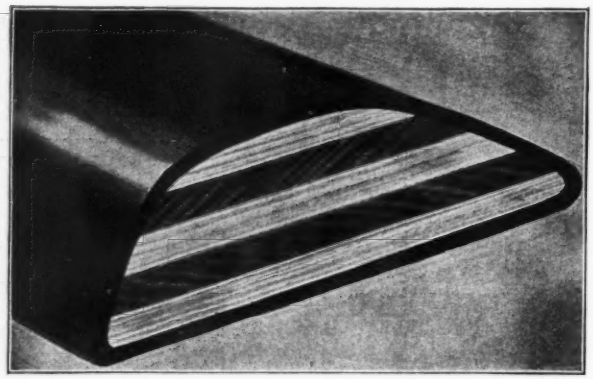

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Whale-bone-ite Seats are found quite generally in the guest bathrooms of fine hotels as well as in public institutions where service requirements are severe. Many new apartment houses are equipping all toilets with them.

Send for free cross-section —see its strength yourself

Figures show that on the average ordinary seats have to be replaced about every three years. If you want to end this needless expense, just as it already has been ended in more than a million public toilets in modern and remodelled buildings, simply install Whale-bone-ite Seats as fast as other seats wear out. Not only will the replacement expense end, but the toilets will be cleaner as Whale-bone-ite is easier to keep clean. Without obligation send for a free Whale-bone-ite cross-section. Simply address Dept. F-11, Seat Division, The Brunswick-Balke-Collender Co., 623 South Wabash Ave., Chicago.

THE Whale-bone-ite steel hinge is moulded integral with the Seat forming an unbreakable unit. Covered with Whale-bone-ite, the hinge is as handsome as the Seat. It cannot tarnish. It is easy to clean.

Brunswick

WHALE-BONE-ITE

TOILET SEATS

THE BRUNSWICK-BALKE-COLLENDER CO. Chicago

Atlanta, Birmingham, Boston, Buffalo, Charlotte, Chattanooga, Chicago, Cincinnati, Cleveland, Dallas, Denver, Des Moines, Detroit, Harrisburg, Houston, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, Nashville, Newark, New Haven, New Orleans, New York, Philadelphia, Pittsburgh, Richmond, San Antonio, San Francisco, Seattle, St. Louis, Tampa, Washington, Montreal, Ottawa, Toronto, Havana, Buenos Aires, Adelaide, Australia, Sidney, Australia, Johannesburg, South Africa

City	Examination of Masters and Journeymen. License without Examination. Registration only	Bond Required of Master Plumber	License Fee Required of Master Plumber	Examination and Approval of Plans and Specifications before Granting of Permit	Fees Collected for Permits and Inspections	Testing of Plumbing System
Elizabeth	Exam. of M. P.	$1000		Yes	$5 plus 25c for each fixture over 7	Smoke, water; smoke final.
Fanwood	Registration only		$5	Yes	$1 plus $2 for inspection of new system of not over 5 fixtures; 50c for each additional fixture	Water; smoke final if required by inspector.
Hoboken	Registration only			Yes		Water or air; peppermint or smoke final.
Irvington	Registration only			Yes		Water or air; air final.
Kearney	Registration only	$1000	$1	Yes	Below $50 no charge; above $50, $2	Water or air; smoke or peppermint final.
Linden	Exam. of M. P.	$500	$10—Renewal $5	Yes	$3 plus 25c for each fixture over 5	Smoke, water, etc.; smoke or other final test.
Long Branch	Exam. of M. P.	$200	$25—Renewal $10	Yes	50c for each fixture; $2 for sewer connection	Water; final not defined. Other than water in freezing weather.
Madison	Registration only	$500	$1	Yes	$2	Water or air; smoke final.
Maplewood	Registration only	$500	$5	Yes	$2	Water; no final mentioned.
Montclair	Exam. of M. P.	$500	$10	Yes	$5	Water, except in freezing weather final named but not defined.
Morristown	Registration only	$500	$10—Renewal $5	Yes	$1 for 2 fixtures; 50c for each additional fixture	Water; smoke final.
Neptune City	Registration only		$50	Yes	$2	Water; air in freezing weather; smoke or peppermint final.
North Arlington	Registration only	$1000	$2	Yes	$2	Smoke, water; smoke final.
North Bergen	Exam. of M. P.			Yes	$5; also $5 for sewer connection	Smoke, water, air or peppermint for both tests.
Ocean	Registration only		$10	Yes	$2 plus 50c per fixture	Water, except in freezing weather; final named but not defined.
Orange	Registration only	$500		Yes	$2	Air, water, peppermint or smoke; no final mentioned.
Paterson	Exam. of M. P. and Jour.	$500	$25—Renewal $5	Yes	$2 plus 50c per fixture up to 50; 25c for each fixture over 50	Water; smoke or peppermint final.
Perth Amboy	Exam. of M. P. and Jour.			Yes	$1 for soil line; 50c for each additional soil line; 25c for each fixture	Water or air; smoke final.
Plainfield	Exam. of M. P.			Yes	$1 plus $2 for 5 fixtures or less; 50c for each additional fixture	Water or air; air final.
Pleasantville	Registration only	$200	$25—Renewal $2.50	Yes	50c for sewer connection; 50c for each of first 10 fixtures; 25c for each additional fixture	Air; final not mentioned.
Princeton	Registration only			Yes	$2	Air; smoke final.
Prospect Road	Registration only			Yes	$2.50 plus 10c for each fixture	Smoke, peppermint or water; final demanded.
Rahway	Registration only	$200		Yes	$2	Water or air; smoke final.
Red Bank	Registration only	$200	$10	Yes	$2	Water; smoke in freezing weather; smoke or peppermint final.
Ridgewood	Exam. of M. P.			Yes	$2 plus $2 for inspection and test; 50c for each fixture	Water or air; air final.
Roselle Park	Exam. of M. P.	$200	$5	Yes	$5 plus 25c for each fixture over 7	Smoke or water; smoke.
Scotch Plains	Registration only	$500		Yes	$3	Water; smoke or peppermint final.
Springfield	Registration only	$500	$5	Yes	$2 plus $2 for each house lateral, and $2 for each test	Water, air, smoke; final not mentioned.
Union	Exam. of M. P.	$1000	$10	Yes	$2	Water or air; air final.
Union City	Registration only		$15	Yes	$3.50 for old buildings; $5 for new buildings	Water; smoke final.
Weehawken	Registration only		$15	Yes	$3.50 for old buildings; $5 for new buildings; $20 for 10 family house; $50 for larger houses	Water; smoke final.
West Orange	Registration only	$500	$2	Yes	$2	Water; peppermint final.
New York						
Albany	Exam. of M. P.			Yes		Water; air final.
Amsterdam	Exam. of M. P.	$500		Yes		Water, smoke in freezing weather; smoke final.
Auburn	Exam. of M. P.					Water, air; no mention of final.
Buffalo	Exam. of M. P.			Yes		Water, air; no mention of final.
Dunkirk	Registration only			Yes		Water; no mention of final.
Elmira	Exam. of M. P.			Yes	$2 for 2-6 fixtures; 7-12 fixtures $3; 25c for each additional fixture	Water; air final.
Floral Park	Exam. of M. P.			Yes		Water; smoke final.
Geneva	Exam. of M. P.					Water; no mention of final.
Glens Falls	No mention in code			Yes		Water; peppermint or smoke final.
Hornell	Registration only			Yes		Water; final demanded.
Hudson	Exam. of M. P.					When required by inspector.
Jamestown	Exam. of M. P.			Yes		Water; air; no mention of final.

City	Examination of Masters and Journeymen. License without Examination. Registration only	Bond Required of Master Plumber	License Fee Required of Master Plumber	Examination and Approval of Plans and Specifications before Granting of Permit	Fees Collected for Permits and Inspections	Testing of Plumbing System
Johnstown	Exam. of M. P.			Yes		Water; peppermint or smoke final.
Lockport	Registration only			Yes		Water; no mention of final.
Mount Vernon	Exam. of M. P.			Yes		Water, air; peppermint, smoke final.
Newburgh	Exam. of M. P.			Yes		Water; smoke or peppermint final.
New York City	Exam. of M. P.			Yes		Water; smoke final.
Niagara Falls	Exam. of M. P.			Yes		Water; air; no mention of final.
Olean	Exam of M. P.			Yes		Water; no mention of final.
Poughkeepsie	Exam. of M P.			Yes		Water; smoke or peppermint final.
Rochester	Exam. of M. P.			Yes		Water; smoke may be required by inspector.
Rome	Exam. of M. P.			Yes		Water; smoke or peppermint final.
Rye	Exam. of M. P.	$3000	$15	Yes	$5 for building not over 20 rooms; $5 for each 20 rooms or fraction thereof additional	Water, air; smoke final.
Searsdale	Licensed			Yes	$5 for not over 9 fixtures; 50c each for additional fixtures; minimum $15	Water; smoke final.
Schenectady	Exam. of M. P.			Yes		Water; no mention of final.
Scotia	Exam. of M. P.		$2	Yes		Water, air; peppermint, smoke final.
Syracuse	Exam. of M. P.		$5	Yes	$1 for sewer; $2 for 1 to 6 fixtures; 25c for each additional fixture	Water; no mention of final.
Tonawanda	Exam. of M. P.	$1000		Yes		Water, air; no mention of final.
Utica	Exam. of M. P.			Yes		Water; no mention of final.
Watertown	Exam. of M. P.			Yes		Water; no mention of final.
Watervliet	Exam. of M. P.			Yes		Implied but not definite.
Yonkers	Exam. of M. P.			Yes		Water; smoke final.
North Carolina						
Asheville	Exam. of M. P. and Jour.	$5000				Water; no final test required.
Charlotte	Exam. of M. P. and Jour.	$1000	May be levied by Board of Aldermen		$1 for each fixture; for each smoke test $2.50	Water; smoke final.
Durham	Exam. of M. P. and Jour.	$500	$25	Yes	50c for first fixture; 25c for each additional fixture	Water; smoke or peppermint final.
Greensboro	Exam. of M. P.	$500	$10			Water, smoke; no mention of final.
Hickory	Exam. of M. P. and Jour.	$1000	$50 to $100 for non-resident plumber		$1 for first fixture; 50c for each additional fixture	Water; no mention of final.
North Dakota						
Grand Forks	Licensed	$1000	$10			Air; no mention of final.
Ohio						
Akron	Exam. of M. P.	$500	$25		25c for each fixture; each line of soil pipe $1; each sewer line $1; each catch basin $1	Water; smoke final.
Ashtabula	No mention			Yes	Sewer permit $1; 25c for each fixture; 50c for each stack	Water, air; no mention of final.
Barberton	No mention					Water, smoke, air; smoke final.
Canton	Exam. of M. P.	$2500	$150		25c plus 10c for each fixture	Water, smoke, air; final when ordered by inspector.
Cincinnati	Exam. of M. P.			Yes	$2 for first fixture; 50c for each additional fixture up to 50, then 25c each	Water, smoke; no mention of final.
Cleveland	Exam. of M. P.				50c plus 25c for each W. C. or bath tub; 15c for lavatories; 10c for sinks, etc	Water, smoke; final required, not named.
Columbus	Exam. of M. P. and Jour.	$500		Yes	$1 for first fixture; 25c for each additional fixture	Water, air, smoke; final required, not named.
Dayton	Exam. of M. P.					Water, smoke, air; air final.
Geneva	Exam. for M. P.; Registration for Jour		$25 to $5; Renewal $10 to $2, as fixed by Board of Health		Amount fixed by Board of Health, not over $5, not under $1	Water, air; no mention of final.
Youngstown	Exam. of M. P. and Jour.	$1000	$5—Renewal 50c		$1 for each sewer line; $1 for each soil pipe	Water; no mention of final.
Oklahoma						
Bartlesville	Exam. of M. P. and Jour.	$1000	$5	Yes	25c for each fixture	Water; no mention of final.
Drumwright	Exam. of M. P.	$1000	$25		$1	Water, air; no mention of final.
Enid	No mention					No mention.
Muskogee	Exam. of M. P. and Jour.	$1500	$5		50c for each fixture up to 6; 25c each, 6 to 24; 12½c over 24; $1.50 minimum	Water; no mention of final.
Oklahoma City	Licensed	$2000	$50		50c for each W. C., lavatory, wash tray, urinal, bath, sink; 75c for sewer, bar sink, 25c for floor drain	Water, air; no mention of final.
Ponca City	Exam. of M. P. and Jour.	$2000	$50		50c for each fixture; minimum $1.50	Water; no mention of final.
Shawnee	Exam. of M. P. and Jour.	$2000			$1 for first fixture; 50c for each additional fixture	Water; peppermint final.
Tulsa	Exam. of M. P. and Jour.	$5000 plus $300 cash	$100		$2 for each inspection of 1 to 4 fixtures; 50c for each additional fixture	Water; air final.

The man on the job knows STOCKHAM INSTALLATION Records

ASK the man who has actually used Stockham Fittings. The long list of important Stockham installations doesn't half tell the story. The real Stockham records show up in installation—no defective fittings to run up costs—no time lost because of poor threads—no expensive profit-cutting work to be done over because of faulty fittings. Fitting satisfaction from start to finish of the job—and in long years of pipe line service.

Because the man who uses them does know Stockham Records, buildings like the Kanawha Valley Bank Building at Charleston, W. Va., are Stockham installations. Alfred C. Bossom, of New York, was the architect; Charles A. Haverland, of Charleston, was his associate. James Stewart & Co., Inc., of New York, were the general contractors and the Standard Engineering Co., of Washington, D. C., were the plumbing and heating contractors who made another record with Stockham Fittings bought from McJunkin Supply Company, of Charleston.

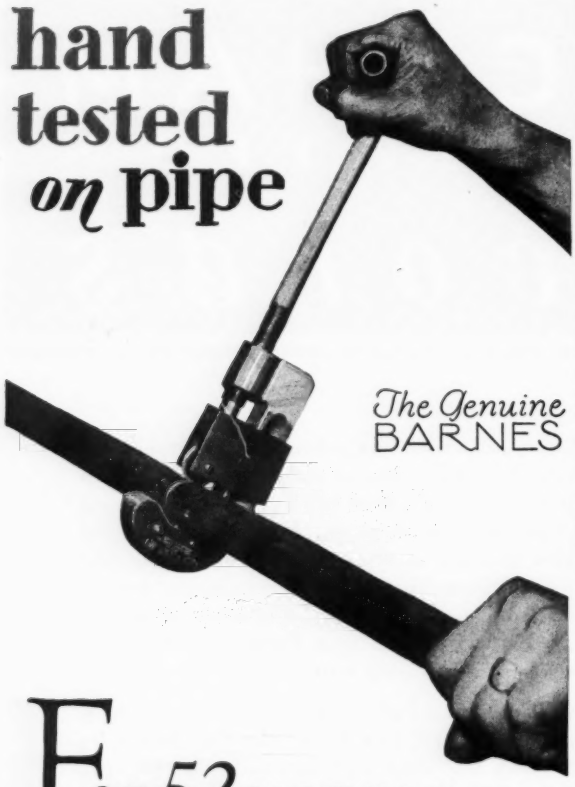
STOCKHAM PIPE & FITTINGS CO.
Birmingham, Ala.

Stocks in Boston, New York, Chicago, Houston, Los Angeles.

CAST IRON	ELECTRIC CAST STEEL	MALLEABLE
Screwed—Flanged Drainage—Sprinkler	*Screwed—Flanged*	*Standard—Extra Heavy—Hydraulic Oil Country*

Be sure the name STOCKHAM *is on the fittings you buy*

Each cutter hand tested *on* pipe



For 52 years The Barnes Tool Company has specialized in the manufacture of the most satisfactory pipe-cutter.

In the production of Barnes wheels, we employ methods in tempering and hardening which science and experience have taught us produce the utmost durability. The *genuine* Barnes knife-blade cutter-wheel is a steel drop forging . . . . not cut from bar stock.

Every *genuine* Barnes of every size is *hand-tested on pipe* before it leaves the factory.

You'll find this red tag on every Genuine Barnes

WHEN you place your next order, be particular to specify "the Genuine Barnes Three-Wheel Pipe Cutter." Then you can be sure of a perfect tool that will *"cut true and last a lifetime."*

The Barnes Tool Company, Inc.
Creators of the Genuine Three-Wheel Barnes
New Haven , , , Conn.

does not sound as near right to us as an examination by a regularly appointed examining board.

While there is no doubt that examinations are for the most part entirely fair, we know of many instances where there has seemed to be something lacking in this respect. Some of the plumbing codes cover this matter, but the vast majority do not. Dallas, Texas, goes into the subject in its plumbing code very thoroughly, and we think it of interest and value to quote in part from several sections on this general subject, as follows:—

"The examining board shall prescribe a reasonable examination of a uniform, fair and impartial nature, testing the knowledge and skill of each applicant as a master plumber, employing plumber or journeyman plumber, to supervise, control or to do or perform the plumbing work necessary in connection with house drainage and the tapping and making connection with the sanitary sewer system or to supervise or to do or perform the work necessary and required by the plumbing ordinances of the City of Dallas in relation thereto. In all cases of journeyman plumbers or plumbers, practical examinations shall be submitted testing the knowledge and skill of any such applicant to mechanically do and perform the work of a plumber.

"Wherever it may be deemed agreeable by the board, and no injustice may be done any applicant, examinations may be submitted in writing, taking the form of questions, provided however, that should any applicant be unable to take the examination in writing, the same shall be orally submitted, provided, that all written examinations submitted shall be signed by at least four-fifths of the members of the board and attested by the secretary of the said board. In making and submitting examinations due regard shall be had and heeded by the said board for the particular class of work required to be done and customarily and commonly done by master plumbers, employing plumbers and journeyman plumbers.

"The said board shall at all times conduct the examinations with the utmost fairness and patience, and should any applicant fail or be unsuccessful in any examination, the said board shall fully apprise the said applicant, so far as it may be practicable to do so, wherein the said applicant is delinquent or fails to meet in a reasonable manner the requirements of the examination. Any unsuccessful applicant may make application for re-examination at such reasonable time as may be prescribed by the board, provided, that no person shall be delayed longer than one week by the board in requiring the new application to be heard.

"No applicant shall ever be denied a license or an examination on account of any affiliation with any organization, union or association of persons, which organization, union or association of persons may be connected with the calling or business of plumbing or otherwise, nor shall any applicant be denied a license or an examination on account of not affiliating with any character or kind of organization whether connected with the calling or business of a plumber or otherwise. Should it appear that any applicant has been denied a license by the board after two un-

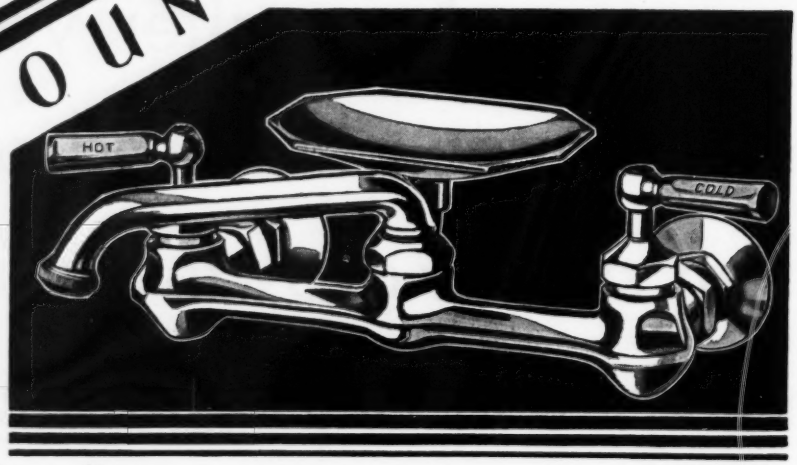
Year after year, since nineteen hundred and seven, steady growth in plant and volume of output have shown that the high quality put into the sanitary ware coming from these factories is consistent and superior . . .

FORDS PORCELAIN WORKS

PERTH AMBOY, NEW JERSEY

MANUFACTURERS OF SANITARY WARE

ANNOUNCING



Furnished with metal soap dish and metal handles only.

CAPITOL

The BOHN-ART faucet

Here is the best looking and most finely made sink fixture that money can buy.

Of red brass with from 79 to 82% copper content, and chromium plated, giving it a lasting finish without attention, only the best of materials obtainable enter into its construction.

With the great interest that is now being centered by the housewife upon improving the appearance and enhancing the utility of her kitchen, this Bohn-Art faucet should prove a real money-maker for the alert dealer.

Product of one of the largest concerns in the industry, it is backed by unexcelled manufacturing facilities and financial resources. Write us for price quotation.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN

successful examinations and the said applicant believes that he was denied a license on account of prejudice or any other improper influence, or in violation of the terms of this ordinance, it shall be the duty of the city attorney's department, upon the said applicant making an affidavit relating such facts before the city attorney's department, to represent the said applicant in an application for a rehearing in behalf of said applicant and it shall be the duty of the board to immediately order a re-examination of the said applicant and the said applicant shall have the right to furnish testimony touching his qualifications as a practical mechanic or a person possessing the necessary knowledge and skill to do, supervise or perform the work necessary to be performed by a master plumber, employing plumber or a journeyman plumber."

Trend Is Toward Extended Use of License Throughout State

In most of the states it seems necessary for a master plumber to submit to an examination in nearly every new town that he works in. This does not seem to be up to the modern demand for efficiency. It would appear that the ideal plan is that a license or certificate good in any one municipality in a given state should be considered equally good in any other section. This, of course, involves state laws on the subject. It is encouraging to know that progress is being made in this direction, and we look to see the time come, and not so far away, that this result is accomplished.

The bonding of master plumbers, and the levying of a license tax on them, are subjects that are no doubt open to discussion, with arguments for and against. Our own opinion is that both practices, if justly carried out, help greatly in the regulation of the plumbing business.

Bonding is a practice that is made use of to very little extent in the states of New York and Pennsylvania, or in Canada. In other parts of the country, as shown by our tabulation, the practice is general.

As a general rule, where a bond is required, a license fee is also required.

In many instances it would seem that municipalities make use of this method for the protection and regulation of the trade, rather than by means of rigid examination. We believe that an examination should be required even though a bond and license fee are demanded.

Size of Bonds

The size of bond required, according to our tabulation, varies from $200 to $10,000, with amounts of $500 and $1,000 largely in the majority.

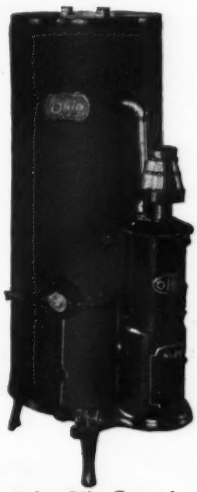
Salt Lake City, Utah, and Knoxville, Tenn., require a bond of $10,000.

Probably Tulsa, Okla., is in the lead relative to size of bond and license fee. This city requires, before a plumbing license is issued, that the applicant provide a bond of $5,000, make a cash deposit of $300, and pay a license fee of $100.

Canton, Ohio, touches the high mark for license fee, with $150 as the amount.

(To be Continued)

The Heater you can safely recommend



Safety Pilot Control —No Extra Cost

WINTER days make it easier than ever to sell OHIO *Automatic* Water Heaters . . . Why don't you write today for our attractive proposition to dealers? Here are some OHIO advantages — LOW first cost, LOW operating costs, BIG *plumbers' profit.* Several attractive models to choose from — $50 and up. Ample capacities — 15 to 1000 gallon. A heater to fit each job.

We sell through the plumbing trade *exclusively.*

THE OHIO HEATER CO.
Columbus, Ohio, U. S. A.

OHIO
Automatic
WATER HEATER
"No Finer Heater Built"

"..WITH A NET PROFIT OF $365.00!"

An interesting SPEED HEATER report that will interest you!

One of our Sales Cooperators wrote this paragraph in a recent sales report:

"Having previously found out through the local Heating and Piping Association that a certain contractor was most aggressive and busiest all year around, I called on him and took one of his men to the plant the next day. In fifteen minutes a complete price for the SPEED HEATER system installed was given, amounting to $900.00, with a net profit of $365.00 to the contractor."

SPEED HEATERS are priced for contractors . . . not only can you make a good margin of profit on the product, you can make money on the installation and still be low!

Why not send in the coupon for the literature and our proposition? And ask for one of our men to call and get acquainted!

THE PRICE IS WAY DOWN

COUPON

B. F. STURTEVANT CO.
Hyde Park, Boston, Mass.

Kindly mail me SPEED HEATER Blue Book, also copy of "Tips on Heater Selling."

☐ I'd like to see a Sales Cooperator when he's in the district.

Name of Company.....

Street Address.....

City..... *State*.....

B. F. STURTEVANT COMPANY

Plants and Offices at: Berkeley, Cal. ◥ Camden, N. J. ◥ Framingham, Mass. Galt, Ontario ◥ Hyde Park, Mass. ◥ Sturtevant, Wis.

Branch Offices at: Atlanta; Boston; Buffalo; Camden; Charlotte; Chicago; Cincinnati; Cleveland; Dallas; Denver; Detroit; Hartford; Indianapolis; Kansas City; Los Angeles; Milwaukee; Minneapolis; Newark; New York; Omaha; Pittsburgh; Portland; Rochester; St. Louis; San Francisco; Seattle; Washington, D. C. *Canadian Offices at:* Toronto; Montreal and Galt. ◥ *Canadian Representatives:* Kipp Kelly, Ltd., Winnipeg

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SPEED HEATERS
"More Heat Less Steam"

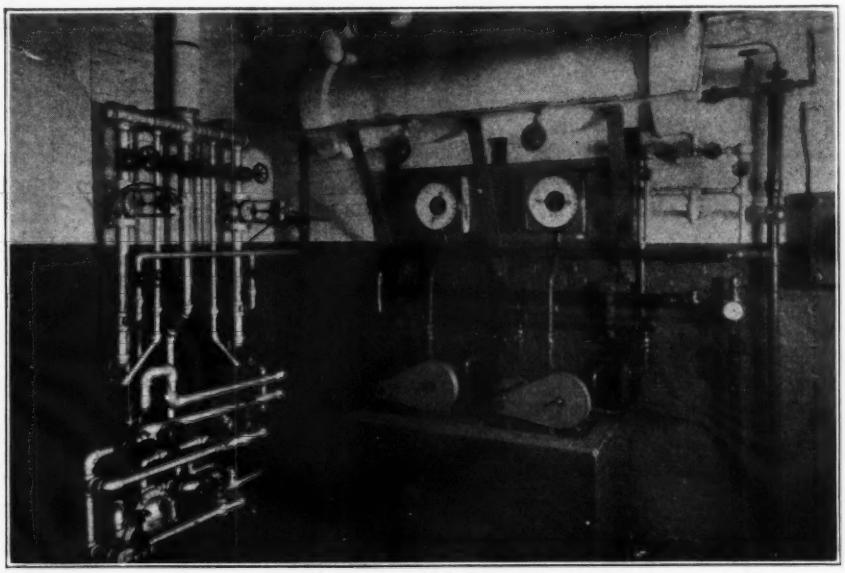


Fig. 1.—Attractive piping job in connection with oil burner installation in large Philadelphia building. The two pumps supply oil from two 10,000 gallon tanks which are equipped with coil preheaters

Oil Fuel Boilers in Large Building

By J. C. JOHNSON

CARRYING a heating load of 40,000 sq. ft. of steam radiation in the large building located at Ninth street and Montgomery avenue, Philadelphia, are three oil-fired boilers. The burner installation is functioning in a highly satisfactory manner from the standpoint of efficiency and convenience and is an example of modern practice.

Three firebox-type boilers of 180 H.P. each are installed in the boiler room and rear-fired with 3 burners. The fuel used is 14-16 deg. oil preheated.

Two concrete fuel-oil storage tanks of 10,000 gallon capacity each are installed outside the boiler room. Each tank is equipped with manhole, preheating steam-coils and steam line for fire quenching service. A steam line is laid parallel to the fill line to tanks, both being enclosed in a vitreous conduit for thermal insulation. Duplicate suction and return lines run from tanks into the boiler-room through a duct that also carries steam lines and returns.

In the boiler room, 2 motor-driven pump sets are installed on a concrete foundation. Silent-chain drives, encased in safety guards, connect the motors and gear pumps. Cross-connected valves on the suction lines, returns and pumps permit the selection of either tank or pump for operation. A preheater is utilized to raise the oil temperature from 90 degrees Fahr. as maintained in the tanks to 180 degrees Fahr. as delivered to the burners. Preheating temperatures are controlled at both tank-coil preheaters by automatic steam valves operating in response to temperature variations. Steam returns from pre-heating coils are equipped with steam traps. Two 12-in. oil gauges are mounted on the boiler room wall for indication of contents of oil storage tanks.

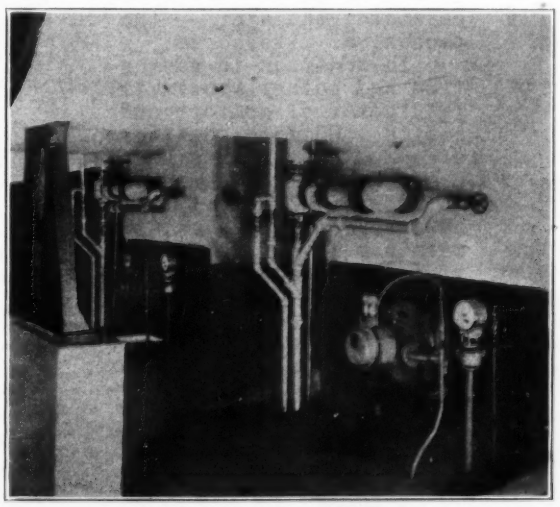


Fig. 2.—Two of the battery of three boilers and oil burners. The design is such as to allow the oil burner unit to be swung out of the boiler for inspection or service. Secondary air is drawn through the checker-board fire brick flooring of the fire-box

The fuel oil is pumped through the suction lines from the tanks against pressure relief-valves discharging into the return lines to tanks. Oil gauges placed between pumps and relief valves indicate the operating pressure. The feed line to the burners is taken off

(Continued on Page 138)

RETAIL ADVERTISING SERVICE

On these two pages this week you will find two newspaper advertisements, a sales letter, two publicity items and copy for a mailing circular. The cuts used in the newspaper ads and in the circular are 35c each—you use the same cuts for both. If you want to subscribe for the service, you can get material from us for twelve weeks for $4.20—we send you two new cuts every other week.

It's Easy to Have Beautiful Hands

HAVE you ever wondered how some women keep their hands in such beautiful condition, and apparently with little effort? In most cases it is not nature alone, especially if the woman does much housekeeping. The answer, in many instances, is that their home is equipped with a mechanical water softener, which, with the aid of certain compounds, regenerates and softens hard water. Softened water is more desirable for drinking and cooking; it saves soap and yet makes soap a more effective cleansing medium; it prolongs the life of all articles that go through the laundry; it saves costly repair and cleaning bills for plumbing and heating units; soft water is better for the skin and thus affects health; in the end soft water is a money saver. The original cost is not high.

(In this space your Name, Telephone Number and Address)

NEWSPAPER AD No. 60

HOW TO KEEP A HUSBAND'S LOVE

"I recently overheard several women asking another of the weaker sex how she kept her hands looking so white and soft," remarked Harry Brown, local plumbing and heating contractor.

"'Well,' she said, 'it's a long story. When Fred and I were first married, he used to admire my hands more than my cooking, but after several years of housekeeping, my hands began to get homely and I had difficulty in keeping them even half-way presentable.

"'Then, one day Fred and I saw an advertisement telling about a water-softening device. A week later, on my birthday, Fred had a water-softener installed, and now look at my hands.'"

SALES LETTER No. 27

HARRY BROWN
PLUMBING & HEATING

Two Rivers, N. Y.,
January 11, 1930

Mr. Edward Jones,
Two Rivers, N. Y.

Dear Sir:

I want to tell you about one of the greatest labor and trouble-savers that man has yet devised. No doubt you have already heard of it, but there is always more to learn.

Think what a relief it would be to be able to forget about nursing your heating plant, opening and closing drafts, trying to keep the house at an even and comfortable temperature; not having to bother about closing the fire down at night and, best of all, to lie abed on cold mornings while the heating system takes care of itself.

The solution of the whole problem is the installation of an automatic temperature regulator — the mechanical fire nurse.

In addition to saving time and bother, there is the factor of comfort and health. Uniform regulation of temperature gives you the proper amount of warmth at all times and in all rooms. An even, comfortable temperature is an important item in the control of health.

And remember, thermostatic heat control can be used with whatever type of heating plant you may have.

Very truly yours,
Harry Brown

HERE are two newspaper publicity items—clip them and hand them to your local paper. They represent valuable sales help.

Sleep Longer on Winter Mornings

IF we tell you that you can sleep 30 minutes longer on winter mornings, you will of course ask how it can be done without making you late to work. It is very simple. Let us install an automatic temperature regulator on your heating system. Then, when you go to bed at night, you may free your mind of the tormenting thought of getting up on cold mornings to administer to that most troublesome of babies, a heating plant. You merely set the clock-like thermostat for the hour you desire heat and your heating system comes under the control of an automatic nurse. Thermostatic heat control assures you of a uniform and comfortable temperature in every room, and may be used in connection with any type of heating plant.

(In this space your Name, Telephone Number and Address)

NEWSPAPER AD No. 61

NEVER STEP ON A BANANA PEEL

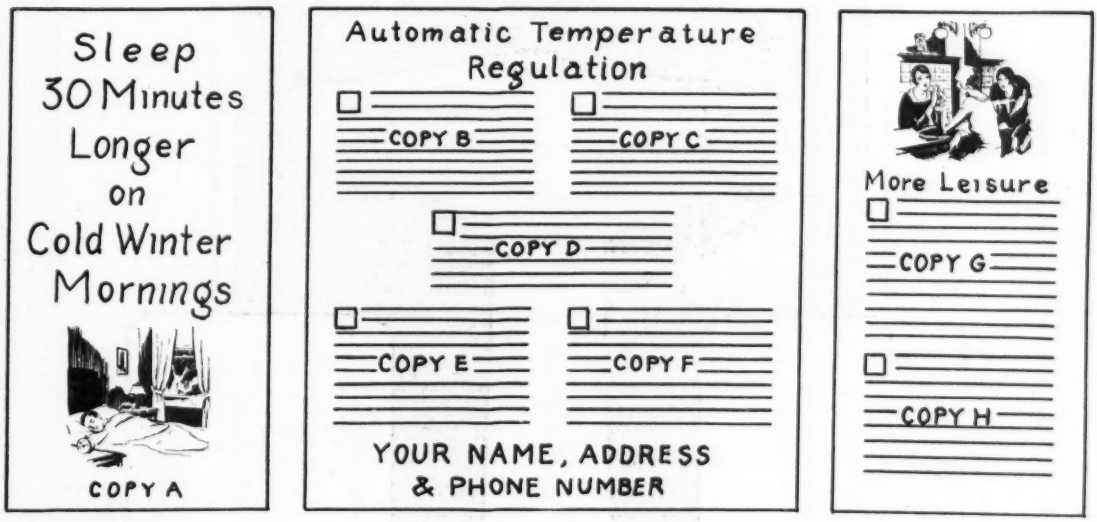
"A friend of mine has been going around on a crutch lately," remarked Harry Brown, local plumbing and heating contractor.

"You see, he gallops down to the basement in pretty much of a hurry on cold mornings to get his heating plant stirred up. So one day last week when he was rushing down the steps to the basement, he stepped on a banana peel which his young son had carelessly mislaid. Well, he did a few cartwheels and landed on his hip.

"The trouble is, he doesn't know that there is such a thing as automatic temperature regulation, which warms the house before you get up."

Layout and Copy for Circular—No. 8

Below is layout and copy for a four-page circular which can be used as a mailing piece, or which may be used as an envelope stuffer. It ties in with the ads on the other page. Complete instructions are given in the center of the page for handling the printing of such a circular.



PAGE 1 PAGES 2 and 3 PAGE 4

Here is how to handle the printing of a circular like the one shown above

Show this page to your printer. That is all you will have to do. Just above is a "type and rule layout" for the printer to follow. It is, of course, of smaller size than the actual circular, which should be made to fit the average small envelope (which the printer calls 6¾ inch because that is its length). That means the circular will be three inches wide and six inches high. It will have four pages and will be folded once. The small illustration with this copy shows what it will look like. The words "Copy A," etc., show the printer where each piece of copy is to be placed. The same cuts shown on the opposite page in the newspaper ads will be used in the circular. They cost 35c each.

This is the way the circular will look. Page 4 is, of course, the back cover.

Copy "A" (For First Page)

Sleep 30 Minutes Longer on Cold Winter Mornings

Copy for Pages 2 and 3—Copy "B"

Many people think of thermostatic heat control as being a convenience and a luxury, while, in reality, it is much more than that. Controlled heat is an important factor in good health. It is a recognized fact that overheated homes are conducive to colds; and chronic colds often lead to pneumonia and tuberculosis. Therefore, automatically controlled heat, uniform and proper in temperature at all times and in all parts of the home, becomes a regulator of health.

Copy "C"

Furthermore, there is the consideration of fire hazard. Overheated plants are dangerous in that they may cause damage to the house or to the heating system itself. When the fire is automatically controlled the danger of overheating at any time is removed.

Copy "D"

Again, there is the item of fuel waste. When you heat your home above the proper temperature for healthful comfort, you are wasting a certain percentage of fuel, thus every degree above 70 represents 3.2 per cent waste, which easily grows larger and larger. This waste cannot be prevented when you attempt to regulate the temperature by hand, but automatic control stops such waste and cuts down fuel bills.

Copy "E"

And, for the man who has been in the habit of arising from a pleasantly warm bed to shiver through the process of getting heat started through the house, automatic regulation of heat will be a joy and a delight for ever. Just imagine what any man can do with 30 minutes extra sleep. He has only to set the clock regulator for the hour at which heat is desired in the morning, and his troubles are ended.

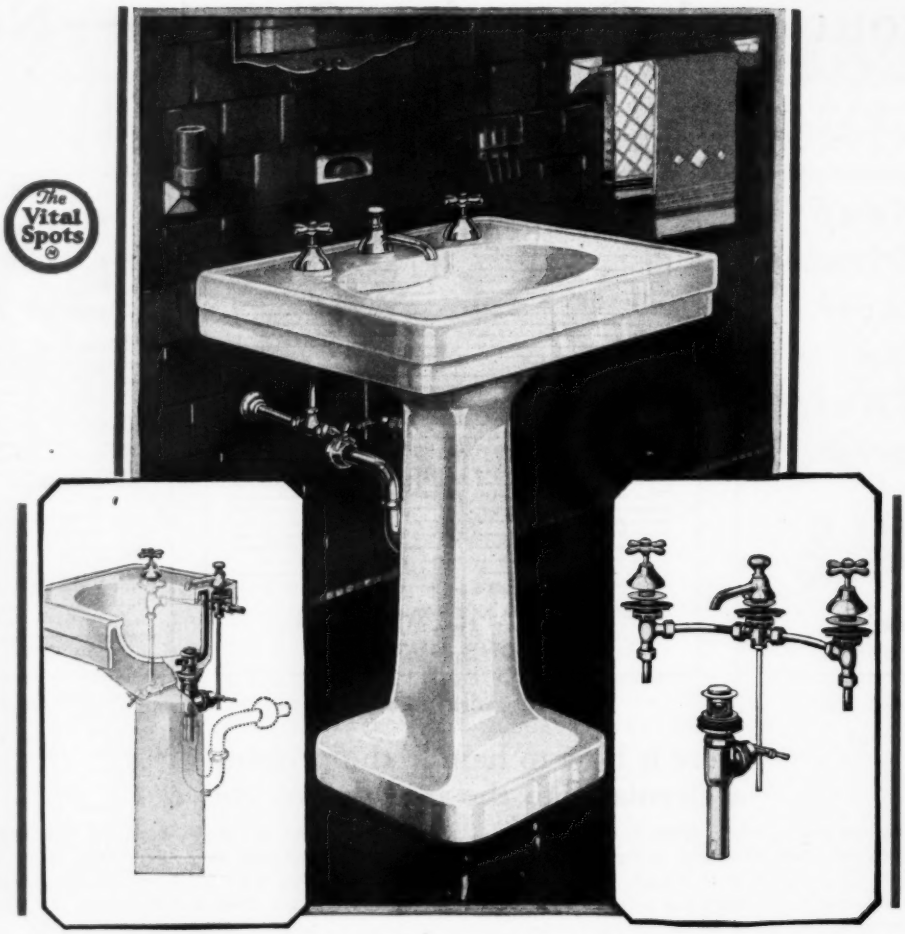
Copy "F"

More Leisure

If your heating plant is operated automatically you may safely leave it with no worries to nag at you; your time is your own. Set the thermostat before you leave with the knowledge that the temperature will have been brought back to the proper degree just before you return. In the evening you may have uninterrupted leisure, or, if you are entertaining, it is unnecessary to leave your guests to take care of the fire.

Copy "G"

Finally, thermostatic temperature regulation is an indispensable item in your home modernization schedule. Comfort and convenience make the home, and thermostatic heat is part and parcel of those two words. Thermostatic control makes your home a better investment. If you will telephone us we will be glad to discuss this subject in greater detail. Remember, we are Comfort Engineers.



MUELLER Bronze— for "the vital spots"

THIS G-3612 all-metal lavatory combination with pop-up drain is an outstanding example of Mueller quality fittings. Chromium, on Mueller Bronze provides beauty and the economy of dependable service. When you sell Mueller Bronze for "the vital spots" of plumbing, you sell lasting satisfaction.

MUELLER CO. (Established 1857) Decatur, Illinois
Branches: New York, Dallas, Atlanta, San Francisco, Los Angeles
Canadian Factory: MUELLER, Limited, Sarnia

MUELLER

PLUMBING BRONZE AND VITREOUS WARE

SUPPLY NEWS

AMONG MANUFACTURERS, WHOLESALERS AND SALESMEN

Pottery Manufacturers Organize Institute

A large number of representatives of manufacturers of vitreous china plumbing fixtures met at the Blackstone Hotel, Chicago, on December 18, and organized themselves into an institute to be known as the Institute of Manufacturers of Vitreous China Plumbing Fixtures. A constitution was adopted, officers elected and offices for the institute were established in Room 814, Pure Oil building, 35 East Wacker drive, Chicago.

Following are the officers of the new organization: George E. Hoffman of Crane Co., Chicago, chairman; A. M. Maddock of Thos. Maddock's Sons Co., Trenton, N. J., vice chairman; W.

George E. Hoffman

John C. Keene

Keith McAfee of the Universal Sanitary Mfg. Co., New Castle, Pa., treasurer, and John C. Keene of Chicago, secretary.

The constitution of the institute is as follows:

A. Assisting in the formulation of fair trade practices through the medium of trade practice conferences and establishing means for interpreting and securing the observance of such rules as may be approved from time to time by the Federal Trade Commission.

B. Co-operating with the U. S. Bureau of Standards in its program of Simplification and Elimination of Waste; and

C. Providing a central organization through which the industry may undertake other similar lawful enterprises which can be done most advantageously by co-operative effort; provided, however, that the institute shall at no time engage in any activity which shall violate, in spirit or in substance, any federal or state law.

Mr. Keene, the secretary of the newly formed institute, was recently connected with the Plumbing and Heating Industries Bureau of Chicago, and prior to that he was secretary of the Master Plumbers Association of Pittsburgh, Pa.

Steel Heating Boiler Institute Adopts Code for Low Pressure Boilers

The Steel Heating Boiler Institute, with offices at 1116 Guardian building, Cleveland, Ohio, has recently adopted a code for the rating of low pressure heating boilers, in line with the institute's program of devoting its efforts to all matters that will tend to the betterment of the industry. Frank S. Records, executive secretary of the institute, will have charge of the institute's offices, and will devote his entire time to the organization's business.

Colonel William J. Donovan of New York City has been retained by the institute as its general counsel.

The officers of the institute include W. A. Nevin, president, Heggie-Simplex Boiler Co., Joliet, Ill.; W. H. Heagerty, vice president, Oil City Boiler Works, Oil City, Pa.; J. T. Dillon, treasurer, Titusville Iron Works Co., Buffalo, N. Y.; and Frank S. Records, executive secretary, Cleveland, Ohio.

The directors are R. B. Dickson, Kewanee Boiler Corp., Kewanee, Ill.; J. R. Collette, Pacific Steel Boiler Co., Waukegan, Ill.; J. T. Dillon, Titusville Iron Works Co., Buffalo, N. Y.; W. H. Heagerty, Oil City Boiler Works, Oil City, Pa.; J. J. Doyle, Ames Iron Works, Oswego, N. Y.; H. E. Seabold, The Brownell Co., Dayton, Ohio; and W. A. Nevin, Heggie-Simplex Boiler Co., Joliet, Ill.

The code for the rating of low pressure heating boilers, adopted by the Steel Heating Boiler Institute, September 10, 1929, is as follows:

1. The purpose of this Code is to provide a uniform method of rating low pressure heating boilers, hand fired.

2. The rating shall be expressed as square feet of steam of hot water radiation or B.t.u. per hour.

3. For the purposes of this Code one square foot of steam radiation shall be considered equal to the emission of 240 B.t.u. per hour and one square foot of hot water radiation shall be considered equal to the emission of 150 B.t.u. per hour.

4. The rating of a boiler in square feet of steam radiation shall be not more than fourteen times the heating surface of that boiler in square feet.

For purposes of this Code heating surface shall be expressed in square feet and include those surfaces in the boiler which are exposed to products of combustion on one side and water on the other. The outer surface of tubes shall be used.

5. The grate area of a boiler for the rating as determined by Section 4 shall not be less than that determined by the following formulae:

For boilers with rating from 300 sq. ft. to 4,000 sq. ft. of steam radiation,

$$\text{Grate Area} = \sqrt{\frac{\text{catalog rating (in sq. ft. steam radiat'n)} - 200}{25.5}}$$

For boilers with ratings of 4,000 sq. ft. of steam radiation and larger,

$$\text{Grate Area} = \sqrt{\frac{\text{catalog rating (in sq. ft. steam radiat'n)}—1500}{16.8}}$$

For the purposes of this Code grate area shall be considered as the area of the grate surface expressed in square feet and measured in the plane of the top surface of the grate. For double grate boilers the grate area shall be considered as the area of the upper grate plus ¼ the area of the lower grate.

6. Boilers selected on a basis of this Code shall be connected to a stack and breeching in accordance with the manufacturer's specifications.

7. The ratings as defined above for purposes of selection are intended to correspond to the estimated design load, which is to be the sum of items A, B and C.

A. The estimated normal heat emission of the connected radiation required to heat the building as determined by accepted practice expressed in square feet of radiation or B.t.u. per hour.

B. The estimated maximum heat required by water heaters or other apparatus connected to the boiler, expressed in square feet of radiation of B.t.u. per hour.

C. The estimated heat emission of piping connecting and other apparatus to the boiler, expressed in square feet radiation or B.t.u. per hour.

◆

Woodward-Wanger Co. Holds Sales Conference

The Woodward-Wanger Co., Philadelphia, Pa., recently held a two-days sales conference in Philadelphia, attended by fifteen members of the sales organization of Philadelphia and New York City. Plans for 1930 were announced.

C. W. Wanger, president, will start at once on a tour to include meetings with members of his organization at Boston, Mass.; New Castle, Pa.; Chicago, Ill.; Memphis, Tenn.; and Oakland, Calif. On this tour, Mr. Wanger will come in contact with every one of the representatives of the company.

◆

Wholesale Company Is Host at Dinner

The Ral Plumbing Supply Co., Passaic, N. J., recently held its first annual "get together" dinner for master plumbers and manufacturers' representatives of the Northern New Jersey territory. Murray Aufzien, president of the company, acted as host to the 100 guests present.

The gathering was entertained by Harry Montgomery, New York City radio artist, who acted as toastmaster. During the evening he called upon, for short addresses, Allan J. Blair, president of the Passaic Master Plumbers' Association; L. W. Thomas of the American Radiator Co., New York City; Harry Vogel, vice president of the Passaic association; Withers Massie, Alberene Stone Co., New York City; J. Muth and M. Wolf, Passaic master plumbers.

Toilet Seat Manufacturers Form Institute

A number of representatives of the leading manufacturers of toilet seats assembled at Chicago, Ill., on December 18 and 19 and, as a result of the conference, an institute was organized to be known as the Plumbers Woodwork Institute. Headquarters for the institute have been established in Room 814 Pure Oil building, 35 East Wacker drive, Chicago.

The following officers were elected: John L. Campbell of C. F. Church Mfg. Co., Holyoke, Mass., chairman; Henry Beneke of Beneke Mfg. Co., Chicago, vice chairman; E. B. Killen of Killzun, Inc., Chicago, treasurer, and John C. Keene of Chicago, secretary.

The constitution as adopted by the institute is as follows:

A. Assisting in the formulation of fair trade practices through the medium of trade practice conferences and establishing means for interpreting and securing the observance of such rules as may be approved from time to time by the Federal Trade Commission.

B. Co-operating with the U. S. Bureau of Standards in its program of Simplification and Elimination of Waste; and

C. Providing a central organization through which the industry may undertake other similar lawful enterprises which can be done most advantageously by co-operative effort; provided, however, that the institute shall at no time engage in any activity which shall violate, in spirit or in substance, any federal or state law.

◆

Will Represent Kainer & Co.

Evins F. Glore & Son, Inc., 5037 Grand Central Terminal building, New York City, was appointed on January 1 as distributor for the products of Kainer & Co., Chicago, Ill., in the metropolitan district of New York City.

◆

J. H. Balmer Co. Holds Sales Convention

The J. H. Balmer Co., Newark, N. J., recently held its annual sales convention at the Newark Athletic club. All salesmen representing the company east of the Mississippi were present. They were congratulated on their showing for the past year by J. H. Balmer, president of the company. The convention closed with a banquet.

Group picture taken at the annual "get together" dinner of the Ral Plumbing Supply Co., at Passaic, N. J.

Personal Mention

GEORGE HERTH has been made vice president and general sales manager of Standard Sanitary Mfg. Co., Pittsburgh, Pa., succeeding ROBERT E. SARGENT who at the close of the year resigned. Mr. Herth has for the past eleven years supervised the company's affairs in the Greater New York territory, coming from Washington, D. C., where he had been associated with the company for some years. He has already taken up his duties at Pittsburgh. Under the existing arrangement C. A. Collins, sales manager of Manhattan; H. C. Stevens, Jr., sales manager of Long Island and Brooklyn, and C. B. Wynne, sales manager of Northern New Jersey, continue in these capacities. Mr. Sargent has planned a trip to Florida for the winter and an indefinite rest.

E. D. FARMER, president of Jenkins Mfg. Co., Bloomfield, N. J., has just returned from a sojourn at Southern Pines, N. C., where with his daughters, Annette and Joy, he enjoyed some golf, horseback riding and other forms of outdoor exercise.

A. SELDEN WALKER, Denville, N. J., past president of the National Association of Master Plumbers, has during the last two years accomplished a great task as chairman of the water commission of the township of Denville. Partly through his effort a water supply system has been constructed at a cost of about $425,000, not including curb taps and meters.—Mr. Walker sends greetings to his many friends in the trade throughout the country. Although he has retired from business, he still continues to follow association activities with deep interest.

W. L. Fleisher

W. L. FLEISHER has been appointed technical advisor to the Richardson & Boynton Co., New York City, in which capacity he will work toward the development of domestic heating and air conditioning. Mr. Fleisher received his technical education at the University of Pennsylvania, later becoming associated with a Philadelphia engineering concern. In 1912 he organized the W. L. Fleisher Co., Inc., acting as president and chief engineer, and in 1925 he sponsored another concern known as the Cooling and Air Conditioning Corp., of which he served as vice president and chief engineer. He has been active in the work of such organizations as the American Society of Heating and Ventilating Engineers, American Society of Mechanical Engineers and the Heating and Piping Contractors National Association.

SAMUEL C. MARX of New York City, has accepted the position of Eastern sales manager for the Semler Co., Jeannette, Pa., and is in charge of the company's offices and warehouse at 43rd avenue and 36th street, Long Island City, N. Y.

WILLIAM A. SHAY, for twenty years in the engineer-

Shoulder to shoulder in the service of safety

Sectional View, Model No. 1

Red Coats...and Red Tops

THE Royal North West Mounted Policeman is a colorful figure. He is known far and wide as an able servant of the public safety.

Just as the trooper's red coat is a symbol of protection in a general sense, the red top of Red Top Relief Valve is a symbol of protection in a special sense which directly affects every plumbing and heating contractor.

A Red Top Relief Valve Model No. 1 protects a domestic hot water supply system — against the explosions and internal ruptures which are caused by rising pressures — against the disastrous consequences of a moment's carelessness.

A Red Top is simple in construction, sure in operation. Pressure in the "closed" system lifts a weighted piston, and opens the valve when pressures approach the danger point. Gravity automatically closes the outlet after the pressure has been relieved.

Red Top No. 1 may be set to relieve to 50, 75, 100 and 130 lbs., while the Model No. 2 relieves at 30 lbs., and is used as the basis of a highly efficient pressure system of hot water heating.

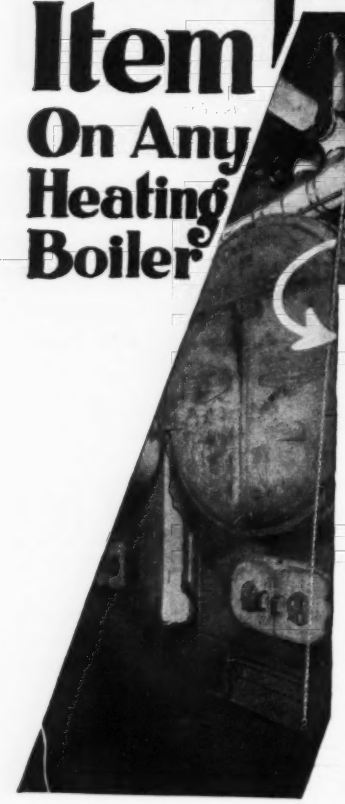
Both valves are approved by the Underwriters' Laboratories, Inc., America's foremost testing organization. Use the coupon for further information.

NEPTUNE METER COMPANY
50 E. 42nd Street **New York City, N. Y.**
Branch Offices in Principal Cities

Red Top Relief Valve

NEPTUNE METER CO. D.E. 1-11-30
50 East 42nd Street, New York, N. Y.
Please send me a copy of the new edition of your folder, "Protection," which describes Red Top Relief Valves and their operation.
Name.....
Street.....
City.....
State.....

An Important Item On Any Heating Boiler



DAMPER REGULATOR

Proper combustion, uniform heat, carefree operation—all hinge on the automatic control of draft and check dampers.

METAPHRAM DAMPER REGULATORS are as fast as a gauge. The change of any condition that affects boiler pressure or temperature, whether in the firebox or in the system, reacts immediately into gradual, controlled draft regulation.

METAPHRAM DAMPER REGULATORS are made to fit *all* domestic heating boilers—hot water, low pressure steam, vapor or vacuum; and they are a profitable item to the contractor for replacement of less efficient devices.

Detailed descriptive bulletins will be mailed on request.

NATIONAL

National Systems of Heat Regulation and Humidity Control, Metaphram Dampers, Metaphram Motors, Industrial Thermostatic Devices, A-Jacks Steam Damper Regulator for high pressure boilers, Metaphram Damper Regulators for domestic steam, vapor, vacuum and hot water heating boilers, Metaphram Furnace Regulators.

METAPHRAM

NATIONAL REGULATOR CO.
2317 Knox Ave. Chicago, Ill.

NATIONAL REGULATOR CO., 2317 Knox Ave., Chicago
Please send us
☐**Bulletin F-100—Type F Metaphram Damper Regulator for hot water boilers.**
☐**Bulletin LP-100—Metaphram Damper Regulators for low pressure boilers.**

Name.....
Address.....
Town..... **State**.....

ing and sales departments of the Richardson & Boynton Co., New York City, has been appointed as manager of the New England branch of that company, to replace HARRY ANNESS, who has been made manager of the New York City branch. Mr. Shay retains the offices and showrooms at 80 Federal street, Boston, Mass.

P. B. WALLACE has just been appointed manager of sales for the Wolff Co., Chicago, Ill. Mr. Wallace comes to his new position with some years of experience in the plumbing and heating industry.

J. P. LATIMER, 1250 North 56th street, Philadelphia, Pa., has been appointed as representative for the Keeney Mfg. Co., Newington, Conn., in the Philadelphia territory, and A. MILTON BUCK, 814 Fern street, Washington, D. C., will represent the same company in the Washington and Baltimore, Md., territory.

A. W. MCKENNEY, formerly assistant treasurer of the old Kelly & Jones Co., Greensburg, Pa., has been appointed district sales manager for the Semler Co., Jeannette, Pa.

◆

Appoints Sales Representative

The Wickes Boiler Co. of Saginaw, Mich., announces the appointment of the Coon-DeVisser Co., 2051 West Lafayette boulevard, Detroit, Mich., as its representative for that district.

◆

Atlanta Salesmen Elect Officers

The Atlanta Chapter No. 15, Plumbing and Heating Salesmen, Atlanta, Ga., held a business meeting on December 21, at which the officers for 1930 were elected. The meeting was directed by R. J. Welsh, the retiring president. The following members were elected to the official body: Perry L. Guest of the Hoffman Specialty Co., Inc., Waterbury, Conn., president; Homer Moore, Grinnell Co., Inc., Providence, R. I., vice president; C. J. McCubbin, Noland Co., Inc., Newport News, Va., secretary; Frank Moriarty of Standard Sanitary Mfg. Co., New York City, treasurer.

The new board of directors is composed of R. J. Welsh of Sloan Valve Co., Chicago, chairman; Roy Watkins, Crane Co., Chicago, and W. A. Kelly of the Mott Southern Co., Atlanta. The installation of the new officers will be held at a date to be announced later, Mr. Welsh stated.

◆

Death of James A. Keating

James A. Keating, for many years a wholesaler of plumbing and heating supplies in New York City and vicinity, died on December 22 at his home, 4377 168th street, Flushing, L. I. Mr. Keating, who was in his 56th year, was born in Hartford, Conn., and at an early age became identified with the plumbing and heating industry. He established a wholesale business at Jersey City, N. J., in 1909 and three years later moved it to New York City. Mr. Keating was a member of Elks Lodge No. 1, New York City; the Royal Arcanum, Celtic Council, and the Knights of Columbus, New York City. The funeral from his home was attended by many of his friends in the industry. Among the large number of floral tributes were pieces sent by the master plumbers' association of the Bronx, Manhattan, Queens, Staten Island and Jersey City.

Any Plumber can be... *Proud*

of an installation like this!

Monel Metal 2-compartment sink in E. M. Statler residence, Great Neck, L. I. Fabricated by DUPARQUET, HUOT & MONEUSE CO., of New York and Chicago. **They will be glad to quote on custom-built Monel Metal sinks built to your measurements.**

furthermore...

any Plumber can profit from Monel Metal *sinks*

A GOOD workman takes pride in his job. This Monel Metal sink installation is a source of pride because it is pleasing in appearance, but also because it has durability and long life built right into it. Its owner will still take pride in it years from now, just as well as when it is new.

That's the advantage of Monel Metal sinks. They are satisfactory to owner and plumber—profitable to both, too.

You can assure your customers that a Monel Metal sink will SAVE...cleaning time, replacement cost. Monel Metal will never rust, it resists corrosion. It retains its natural silveriness. It is easily kept clean and has no coating to chip, crack or wear off. Monel Metal's beauty harmonizes with any color scheme.

You may be sure that you can profit from Monel Metal sink installations. They are readily sold at quality prices, they bring you new trade, they make satisfied customers and create good will.

Let us send you information about how you can capitalize the demand that has been created for Monel Metal sinks.

SEND FOR BOOKLET "SINK DESIGN CONTEST"

INCO MONEL METAL

Monel Metal is a technically controlled Nickel-Copper alloy of high Nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

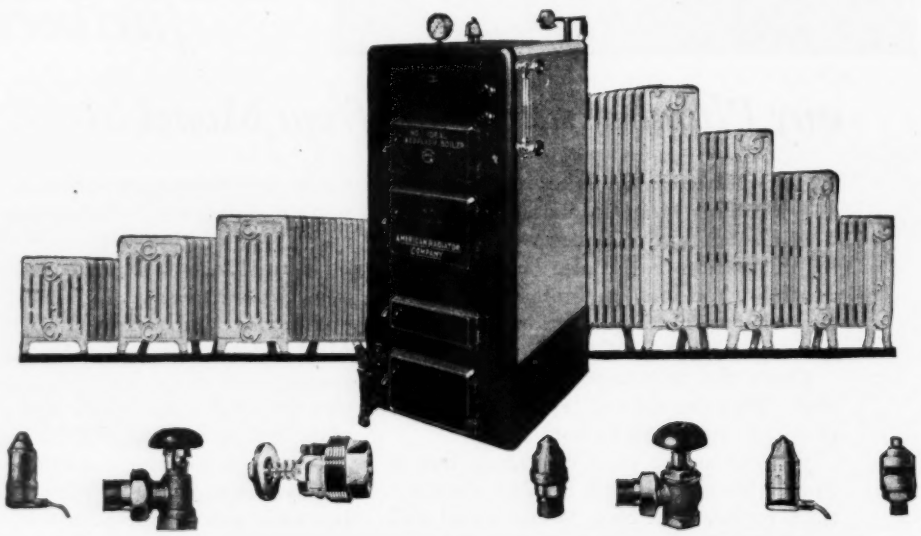
MONEL METAL

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

This INSTALLATION paid for itself in SEVEN MONTHS

4 family house, Newark, N. J., with modernized heating
Heating Contractor: Joseph Soriano, Newark, N. J.

WHEN the heating contractor sold the order for the installation of a modern American Radiator Heating Plant in this building he was actually making the owner a present of an additional income of $120 a month. The cost of the installation was $850—the rent before installation was $50 per apartment—the rent today is $80 per apartment—and the tenants are more than satisfied. Right in your own neighborhood there are countless buildings where an "All-American" Heating Plant can do the same thing . . and put money in your pocket.



AMERICAN RADIATOR COMPANY

40 WEST 40th STREET, NEW YORK

Capacity of Radiator Supply Branches for One and Two Pipe Systems

(Continued from Page 78)

noise unless it is purely a hissing sound due to the velocity of steam through the valve. A small valve, however, will require a higher steam pressure for the same capacity.

The effect of length of a branch on its capacity was investigated by studying branches 5 ft. and 10 ft. in length. The solid line curves Figs. 2, 3, 4 and 5 give the capacities of the 10 ft. branches, while the capacities of the 5 ft. branches are given by the broken line curves.

It will be noted that for small pitches the effect of the length of the branch is much more pronounced when the condenser was used or when the sound was not the limiting factor. This may be explained by the fact that part of the head producing flow in the horizontal pipe may be due to piling up of water at the end from which it is flowing so that the actual diameter of the pipe may be considered to some extent as producing flow of condensate counter to the steam. A perfectly level pipe or in fact one with a small reverse pitch will allow condensate to return, but at a reduced rate. The effect which the diameter of the pipe has on producing flow is a function of the length of the pipe. Hence it will be seen that the possible head varies inversely with the length of pipe and directly with its diameter. This, no doubt, accounts for the fact that the difference in capacity of the 5 and 10 ft. length of pipe is more pronounced in the larger branches. It also accounts for the fact that the effect of the length of the branch on its capacity decreases rapidly as the actual pitch of the pipe increases.

When the steam was condensed in the radiators without noise (Curves *D* and *E*) the difference in maximum capacity of the 5 and 10 ft. lengths, without noise, was little affected by the pitch of the branch.

Similar data to that given in Figs. 4 and 5 for the 1¼-in. one and two-pipe branches are given in Figs. 6 and 7, 8 and 9, and 13 and 14, for 1 in., 1½-in. and 2-in., one and two-pipe branches respectively. Fig. 10 gives the maximum capacity with noise for a ¾-in. branch in a one and two-pipe system. Data for maximum capacity

Table 1. Capacity of radiator supply branches one-pipe system

Pipe Size	Capacity in Square Feet of Equivalent Radiation			
	Based on curves *F* and *G* and pitch of 0.6 inches in 10 feet		Based on Guide 1929, Tables 8 and 11, Pitch at least ½ inch in 10 feet	
	5-ft. Branch	10-ft. Branch	Shorter than 8-ft. Branch	Longer than 8-ft. Branch
A	*B*	*C*	*D*	*E*
1 in.	31	28	20	.....
1¼ in.	68	62	55	20
1½ in.	102	93	81	55
2 in.	189	169	165	81

THE great variety of types and sizes of Kennedy Screwed Fittings is only one of many advantages of standardizing on Kennedy Products for your plumbing and heating jobs.

Pipe fitters find that Kennedy Fittings save time, labor and expense for they go on the pipe easily and quickly, make clean-cut leak-proof joints, and are lastingly tight.

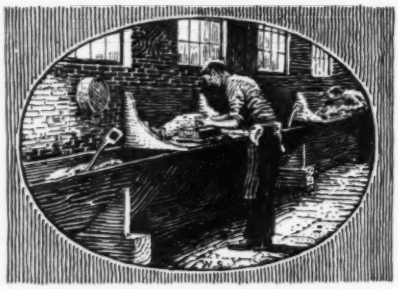
Ask your local supply house for Kennedy Fittings and Valves on your next job.

THE KENNEDY VALVE MFG. CO., ELMIRA, N.Y.

Branches and Warehouses in Principal Cities

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS



Exporting Valves to Germany a Half Century Ago

IN the 70's the United States took its place as an industrial world power—with exports exceeding imports. Manufacturers were beginning to look further than the "home market" for business. Agricultural machinery found its way to Russia and New Zealand. A $15,000 steam shovel was sold to a British Railway. At about this time also Belknap valves of the gland and follower type were finding great favor with German concerns. Today Belknap Manufacturing Company valves made in Bridgeport, Conn., are used throughout the civilized world.

BELKNAP

$75 to $295
C. E. SCHULZ,
Plumber of Dayton, Ohio, says:
"I have sold several Ever-Hot Heaters and every customer is well satisfied. In fact, I have one in my own home and it certainly has given wonderful service economically. I never hesitate to recommend the EverHot."
EverHot Heater Co.
Detroit, Michigan
Branches and Sales Offices in 64 Cities in United States and Canada

with noise are given only for the ¾-in. branch. The curves, Figs. 6 to 9 and 13 and 14 give data only for the capacity of the branch with fittings of the same nominal size and no valve for the reasons that larger fittings in a branch are not practicable and capacity of valves vary with design and a single figure could not be given which would be representative of all makes.

Figs. 15 and 16 show how the maximum capacity of branches without noise varies with pitch, area, and length of pipe in the one and two-pipe systems, respectively. Figs. 11 and 12 show how the maximum allowable velocity without noise varies with pitch of branch and pipe area for 5 ft. and 10 ft. one and two-pipe branches.

Practical Application

The purpose of the study was to make available information concerning the flow of steam and condensate in one and two-pipe radiation branches on which a practical and logical set of pipe sizing tables could be based.

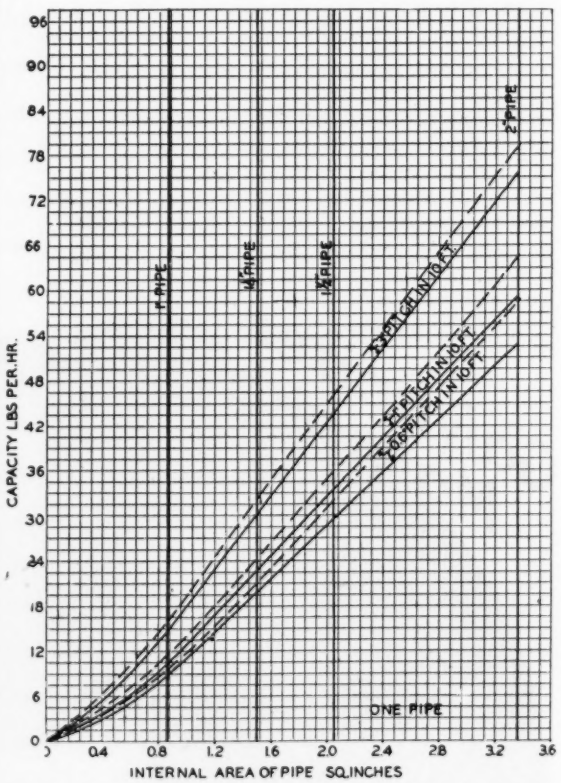


Fig. 15. Variation of capacity with pipe area, length and pitch of one-pipe branch. No noise. Solid line curves 10 ft. Broken line curves 5 ft.

This information is given in the curves *A* to *E*, Figs. 4 to 9 and 13 and 14 and in Figs. 11, 12, 15 and 16. In making use of these values, however, it should be borne in mind that they are maximum values which could be obtained on commercial pipe under good laboratory conditions. The pipe was well reamed, was new, clean, and straight so there were no sags in the branches.

These conditions will not always be had in practice and some allowance must be made therefore. This allowance will be in the nature of a factor of safety. A

Ask the "Standard" representative to demonstrate the difference in enamels

The next time the "Standard" representative calls on you ask him to show you the difference between ordinary enamel and "Standard" Acid-Resisting Enamel.

You can't see the superiority of Acid-Resisting Enamel on the surface. But watch the "Standard" representative pour a few drops of muriatic acid on a piece of ordinary enamel and a piece of "Standard" Acid-Resisting Enamel. How quickly you will see the difference! The acid will eat away the ordinary enamel — the "Standard" Acid-Resisting Enamel will be unharmed.

Would you avoid the risk of having a bathtub ruined by tile-cleaning acids, or by paper pasted on the tub to protect it while installing? Would you build a reputation for finest quality merchandise and utmost reliability? Then recommend and sell "Standard" Acid-Resisting Enamel, the most durable and beautiful enamel made. It provides a plus satisfaction for your customer and a plus profit for you.

Standard Sanitary Mfg. Co. - Pittsburgh

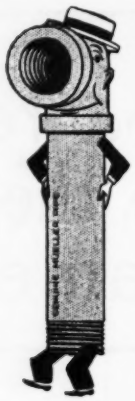
(DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION)

"Standard" PLUMBING FIXTURES

Genuine Mueller

BRASS PIPE AND FITTINGS

Order from jobber — Get Mueller Genuine Brass Pipe with Mueller Fittings. Send for new Mueller Catalog.



Mueller Brass Co.
PORT HURON · MICHIGAN

PORCELAIN SHOWER HEAD
with Ball Joint

Adds beauty and individuality to your bathroom at a very slight increase in cost.

ASK YOUR JOBBER FOR No. 8230

J. B. WISE, INC., Watertown, N. Y.

Dole

Automatic *Non-Adjustable*
All Metal *Thermostatic*

SYPHON AIR VALVES

The Dole Valve Company, 1913-33 Carroll Ave., Chicago

B&G
Outside Type
WATER HEATER
for Steam or Vapor Heating Boilers
The only Indirect Heater having removable coils without disconnecting pipes. Ask your Wholesaler or write us for details.

BELL & GOSSETT COMPANY
3000 Wallace St., Chicago, Ill.
2281 Scranton Road, Cleveland, Ohio
634 Caswell Block, Milwaukee, Wis.

Also manufacturers of "Unitem" Submerged Water Heaters

R. L. Duppmann Co., 811 Canfield Ave., Detroit, Mich.
E. McCloskey, 850 Paul Brown Bldg., St. Louis, Mo.
Hayda Myer, 2224 Comer Bldg. Birmingham, Ala.
M. M. Rivard, 601 Gumbel Bldg., Kansas City, Mo.
Bookhout & Law, 331 Madison Ave., N. Y. City, N. Y.
Vesey-Gilbert Co., 2401 Chestnut St., Philadelphia, Pa.
C. U. Martin, Rialto Bldg., San Francisco, Calif.
B. J. Mulcahy, 210 So. 10th St., Minneapolis, Minn.
John A. Lungstrum, 9 Keely Bldg. Denver, Colo.

factor of safety cannot be established by laboratory test alone but should also take into account other factors depending on installation and operating conditions, which factors can better be supplied from the practical experience of heating engineers.

Table 2. Capacity of radiator supply branches two-pipe system

Pipe Size	Capacity in Square Feet of Equivalent Radiation			
	Based on curves *F* and *G* and pitch of 0.6 inches in 10 feet		Based on Guide, 1929, Tables 9, 10, 12, 13, 14. Pitch at least ½ inch in 10 feet	
	5-ft. Branch	10-ft. Branch	Shorter than 8 ft.	Longer than 8 ft.
A	*B*	*C*	*D*	*E*
1 in.	36	34	26	.....
1¼ in.	79	75	58	26
1½ in.	117	108	95	58
2 in.	209	191	195	95

Curves *F* and *G*, Figs. 4 to 9 and 13 and 14 inclusive, give a suggested capacity of branches of the different sizes studied based upon a factor of safety of 20 per cent. The capacities given by curves *F* and *G* are 80 per cent of those given by curves *D* and *E*.

It should be pointed out that values given in the curves are maximum capacities or maximum capacities less a factor of safety as specified. No allowance is made for heating-up load and condensation in either

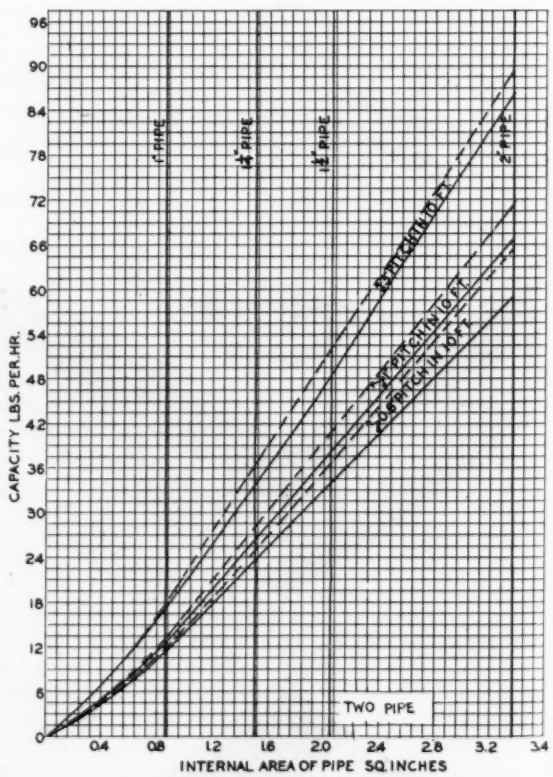
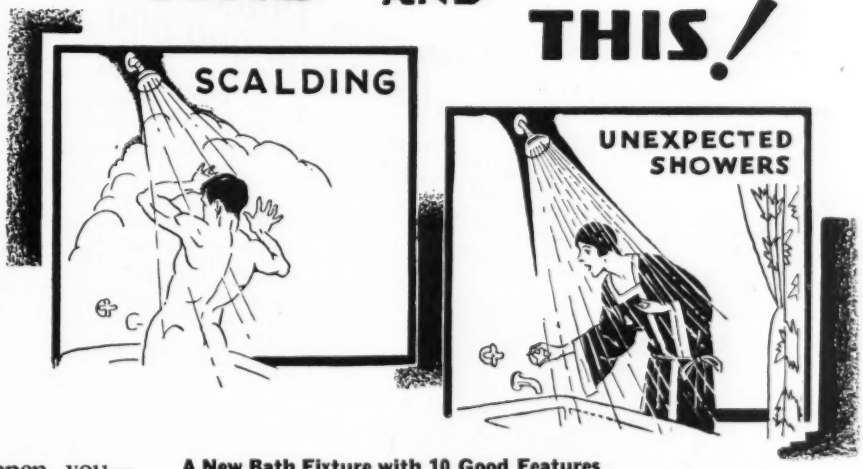


Fig. 16. Variation of capacity of a two-pipe branch with pipe area, length and pitch. No noise. Solid line curves 10 ft. branches. Broken line curves 5 ft. branches

THIS

PREVENTS

THIS AND THIS!



When these accidents happen, you—the plumber—get the blame for installing such hazardous equipment.

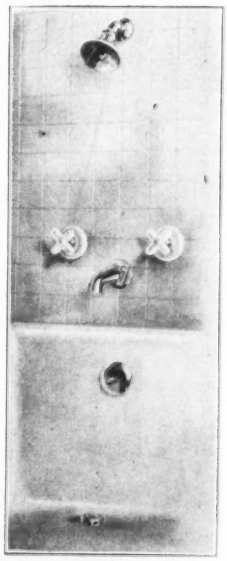
No plumber ever risked his reputation by installing a Chicago Faucet product.

Here is a new bath fixture that has many distinctive features—listed herewith—which any plumber and owner can appreciate. They are mechanically sound—foolproof in operation—easy to install.

Write for complete information and copy of new catalog E—just off the press.

A New Bath Fixture with 10 Good Features

1. Only two valves, separate HOT and COLD, in the wall.
2. The shower bather tempers the water at the spout, then switches the same water up to the shower head. No accidental scalding, as with mixing valves.
3. When the shower bather turns off the HOT and COLD valves, the diverter automatically returns to the tub position. No unexpected showers.
4. A 4-inch cast brass shower head so constructed that none of the holes will stop up. Always 49 streams shooting in the proper direction.
5. A shower head face plate removable by loosening one center screw with a screw driver. The screw cannot drop out of the face plate and go down the drain.
6. Asbestos shower face plate washer—not rubber.
7. A shower head ball joint, all metal, perfectly machined. No packing washer to break up and clog the holes in the head.
8. A diverter valve in the spout on the wall, not in the wall. All metal—no rubber—no spring. Gravity holds it in the TUB position because the handle outweighs the flapper. When the water is on and the handle is raised, water pressure holds it in the SHOWER position as long as there is water in the riser.
9. HOT and COLD valves with the standardized working unit that's renewed as easily as a light bulb. All wearing parts come out with the loosening of the cap. Seat is of monel metal. Costs four cents.
10. A pop-up bath waste with the stopper in the outlet of the tub. No need to get at it from behind.



THE CHICAGO FAUCET COMPANY

2700-22 N. Crawford Avenue Chicago, Illinois

CHICAGO FAUCETS

The Vogel News

Published Yearly in the Interest of the Plumbing Industry

WILMINGTON, DEL., JANUARY 1, 1930

1930 TO SET BUILDING RECORD

Authoritative Estimates Place Building Volume at $10,000,000,000

Stock Market Collapse Removed Last Important Obstacle to Increased Construction Activity, Says F. W. Dodge Corporation.

Vogel Company To Go Into Even More Extensive Advertising Campaign

Millions of pieces of direct-by-mail literature of all sorts will be distributed in 1930 by the Joseph A. Vogel Company, Wilmington, Delaware. During the past year the Vogel Company has consistently pushed the Vogel line of frost-proof closets and hydrants, as well as the Vogel Number Ten Selflush Closet for schools, institutions of all sorts, factories, waiting rooms, theatres, and moving picture houses.

Pages of space in a multitude of publications read by users of Vogel products have been used consistently in connection with the direct-by-mail work. The whole idea behind these efforts is to make an increasingly greater market for Vogel products which are sold only through plumbing channels—to jobber—to plumber—to consumer.

All the profit stays in the Plumbing Industry, where it belongs. This is the policy on which the business of the Joseph A. Vogel Company is founded and it is a policy which has never been deviated from during the more than a score of years that the makers of Vogel products have been in business.

Still on Endurance Test

The Vogel Selflush Number Ten Closet still on Endurance Test which started July 16, 1920—not even a washer has been replaced, and the closet, under actual operating conditions, has flushed more than 90,000 times—equal to more than 30 years of actual use.

Coldie and Frostie Start on Second Year

The Vogel Cold Test Twins, Coldie and Frostie, are as game as ever to tell you of their woe in attempting to crack a Vogel Number One Closet.

These Twins, whose capers are told in verse, have recently returned in rhyme from the North Pole, where they practiced new stunts to try on Vogel Frost-Proof Closets and Hydrants. However, they will probably have to repeat their lament of last year when Coldie said:—

"Gaze on this gadget
That once was a pick
And it made in the Vogel
Not even a nick."

Read about these two in your trade papers, and on stickers and blotters, distributed to plumbers and jobbers in quantities.

JOSEPH A. VOGEL CO.
Wilmington, Del. :: St. Louis, Mo.

THIS IS THE ADVERTISING WORK THAT IS BEING DONE TO HELP YOU SELL MORE VOGEL PRODUCTS DURING 1930

And remember that behind all of this direct by mail advertising is a complete advertising program—all page space—appearing in the following publications:—

American School Board Journal
American School & University
Architectural Forum
Buyers Register
Cotton
Domestic Engineering
Domestic Engineering Plumbing & Heating Catalog
Davisons Textile Blue Book
Ecclesiastical Review
MacRaes Blue Book
Plumbers Trade Journal
Progressive Labor World
Southern Textile Bulletin
Sweet's Architectural Catalog
Textile World
Trades Union News
Wholesaler & Salesman

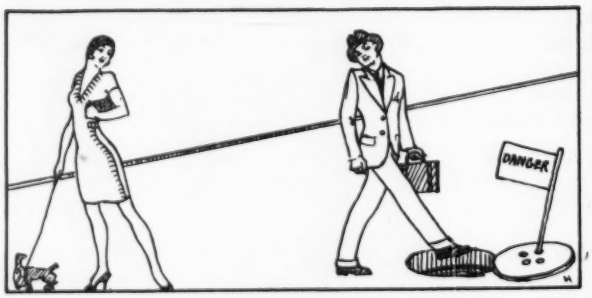
You know and so do we that if we all pull together we can make 1930 the big year in the plumbing industry.

Push VOGEL Number Ten Closets for school and factory installation—also for residence basements — and the VOGEL Number One Frost-Proof, 500,000 in use.

.. VOGEL Products ..

See also Vogel advertisements on first and last pages.

The HAAS
Frost-Proof
CLOSET
for Uninterrupted
Trouble-Free Service
The mission of the Haas Frost-Proof Closet is to end service calls and make profits mount. And it fulfills its mission. No freeze-ups—no backwash of sewage into fresh water lines!
The Haas patented inlet valve automatically removes all danger, and gives uninterrupted trouble-free service. The valve itself is simple—complete operating rod lifts out of casing intact. Made of brass and phosphor bronze. Closet hopper has flush rim cast solid, or enameled rim furnished on request. Seat release flush, or flow with seat depressed. Priced attractively—bound to sell easily.
Ask your Jobber
The Philip Haas Co. Inc.
Dayton, Ohio



BAD LUCK

is sometimes

JUST CARELESSNESS

Your luck will always be good if you insist on Midland ferrules — good metal — first class workmanship and careful inspection.

Order from your jobber.

MIDLAND METAL MFG. CO.

KANSAS CITY, MO. *NEWARK, N. J.

*Newark plant manufactures roof flashings only

bare or covered pipe. Since these factors vary with other conditions they should be considered as factors in calculating the maximum demand for steam.

Tables 1 and 2 give capacities of one and two pipe branches, ranging from 1 in. to 2 in. in size as taken from curves *D* and *E*, Figs. 4 to 10 and 13 and 14 and from THE GUIDE 1929.

THE GUIDE tables specify that branches longer than 8 ft. should be one pipe size larger. Also that branches should have a pitch of at least ½-in. in 10 ft. Capacities in columns *B* and *C* in the two tables based upon this study are for a pitch of 0.6 in. in 10 ft. or approximately 1 in. in 16 ft.

Summary and Conclusions

1. The investigation gives the capacities of one and two-pipe radiator supply branches without audible sound as shown in curves *D* and *E*, Figs. 4 to 9 and 13 and 14. These capacities are, however, only had when the pipe is well reamed and should be taken with a factor of safety for less perfect workmanship.

2. A series of curves *F* and *G* Figs. 4 to 9 and 13 and 14 give capacities after a factor of safety of 20 per cent has been applied.

3. Valves found on the market frequently have port openings smaller than pipe of the same nominal pipe size. Such valves limit the capacity of radiator branches below the capacity of the pipe itself for pitches above a certain value which are, however, greater than the pitches usually allowed.

4. The capacity of a branch is greatly increased by increase in pitch.

5. There is a measurable difference between the capacity of branches 5 and 10 ft. in length which difference varies with the size of the pipe and the pitch. The larger the pipe the greater the difference in capacity with length. This difference is also more pronounced for small pitches.

◆

American Radiator Co. Broadcasts Opera

The American Radiator and Standard Sanitary Corp., New York City, on December 21 over the nation-wide net-work of the National Broadcasting Co., presented the Puccini opera "La Tosca" as the second of a group of six operas by this composer which are scheduled to be given monthly. Frank I. Fletcher, who is in charge of the presentations for the corporation, urged listeners to turn their attention toward modernizing the sanitary and heating equipment of their homes.

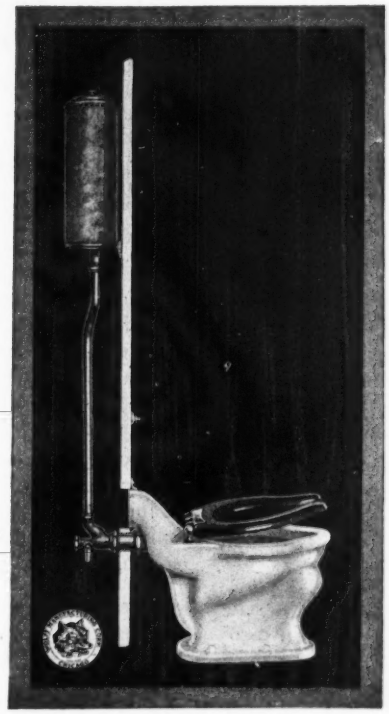
◆

Steam Heating Used in Ancient Cyprus Palace

A news item under date of December 18, from Stockholm, by the Associated Press, states that a Greek temple of the sixth century, B. C., with fifty life-size statues, has been unearthed on the island of Cyprus in the Mediterranean by the Swedish professor Einar Gjerstad and his associates.

In the remains of the recently excavated palace of Vouni of the same island, dating from the Fifth century, B. C., Professor Gjerstad found a room to which water was led in three conduits and then boiled in order to heat the bedrooms on the second floor with steam.

The results of his researches show that Cyprus was colonized by the Mycenaean Greeks about 1200 B. C.



WOLFF

SCHOOLS, FACTORIES and PUBLIC TOILETS experience a great deal of trouble through the carelessness of users of the ordinary Tank or Valve operated Closets.

WOLFF "SOLIDON" HEAVY VITREOUS SYPHON WASHDOWN CLOSET with Jet, EXTENDED LIP and RAISED REAR VENT equipped with a seat operated PRESSURE VALVE and TANK provides a satisfactory fixture to correct this condition, as it flushes AUTOMATICALLY when Seat is released.

SOLIDON PRESSURE TANK CLOSETS

THE PRESSURE TANK CLOSETS REQUIRE 25 POUNDS PRESSURE, but when this is not available—WOLFF PRIMING TANK CLOSETS are recommended, as these will operate on low pressure. A complete selection will be found in our General Catalogue "G."

WOLFF CO.

"Superior Plumbing Fixtures"

CHICAGO

Branches and Distributors in all Principal Cities

SUPERIOR PLUMBING FIXTURES

Research Conference at Illinois University

A meeting of the Advisory Committee on heating research was held at the University of Illinois on December 20. Those who were in attendance at the meeting are as follows: From the University: Prof. A. C. Willard, head of department of mechanical engineering, Prof. A. P. Kratz, M. K. Fahnestock and S. Konzo; and from the industry: Dick Johnson, C. D. Brownell, C. A. Bolton, secretary Illinois Master Plumbers' Association, Homer Linn of the American Radiator Company, representing the Institute of Boiler and Radiator Manufacturers, and R. J. Stewart of Johns-Manville Corp. The morning session was devoted to the showing of graphic and photographic results of the past year's work of the university on research in direct steam and hot water heating. This was an extension of the investigations reported in Bulletin No. 192, and is covered by the following eight subjects:

(1) The Effect of Radiator Location on Steam Condensation and Room Temperature.

(2) The Effect of Larger Enclosures on Larger Radiators to Raise Breathing Line Temperatures.

(3) The Effect of Changes in Sizes of Enclosure Inlets and Outlets on the Steam Condensation of a Radiator and Room Temperature.

(4) The Effect of the Presence or Absence of Curtains at Windows on the Steam Condensation of a Radiator and Room Temperature.

(5) The Effect of Storm Sash over Double Hung Windows on the Steam Condensation of a Radiator and Room Temperature.

(6) Temperature Gradients through Windows with Both Single and Storm Sash.

(7) A Comparison of the Performance of Unenclosed Wall and Tubular Type Radiators on the Basis of Steam Condensation and Room Temperatures.

(8) The Effect of Enclosures on Wall Radiators on the Steam Condensation and Room Temperatures. Both Painted and Unpainted Enclosures were Used.

The representatives of the Illinois Master Plumbers' Association and the Institute of Boiler and Radiator Manufacturers approved the work for publication in a university bulletin. A partial tentative program for the coming year was discussed.

Modernization Offers Large Opportunities

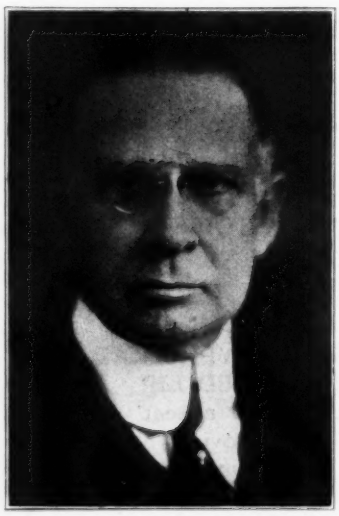
By CLARENCE M. WOOLLEY

To the Editor:

"The slump of the past few months in the amount of new building started is apt to be felt acutely by the heating and plumbing industry during the first part of 1930. If, however, interest rates continue to decline we can expect, as in the past, that an increase in the number of new contracts let will shortly follow. In that event the later months of 1930 should show an improvement in our industry.

"But in the meantime there is a vast reservoir of work awaiting the plumbing and heating contractors who go after it aggressively.

"I refer to the rehabilitation and modernizing of old and often insanitary buildings, many of them homes, which need above all, the equipment which our industry produces.



Clarence M. Woolley

"It is estimated that it would take 24 billion dollars to modernize our antiquated structures. Last year about a half billion dollars, it is said, was spent for that purpose. Not all of that work, of course, is in our field, but there is enough of it to tide the industry over any dull times we are likely to experience. But it must be developed.

"For example, the best estimates indicate that in the United States there is only one bathtub to each twenty people. That means that there is a potential market for 11,000,000 more tubs and for the other plumbing accessories that go with them.

"Furthermore, the bureau of the census reports that 16,000,000 old residences lack modern radiator heating. That is a tremendous market which has been largely ignored.

"Other industries have gone after the home owner's dollar with more aggressiveness. There is said to be one passenger automobile to every five people in the United States, or roughly four times as many automobiles as bathtubs.

"Many people who consider it necessary to own cars, washing machines, radios and pianos, put up with inadequate plumbing and heating equipment.

"The manufacturers and distributors of such luxury items have been persistent in their efforts to get people to buy. They have used local and national advertising and have solicited business face to face and door to door. Their persistence has been rewarded.

"We can use those methods with at least equal success, and so get home owners to install modern heating and plumbing equipment on which their comfort and health depend in preference to less important items which are purely luxuries.

"A strong appeal can be made to landlords on the basis that modern heating and plumbing will enable them to secure much higher rents, often turning a mere 'taxpayer' into a worthwhile income producer.

"There is nothing visionary or romantic in these statements, for we have at least 100 or 200 customers who for the past few years have gradually developed a considerable volume of business, some of them, what might be called an enormous volume. One firm in particular

sold 800 jobs this year, and practically all of them without competition at a very good profit. The principle has been well proven to be practical. Those who will interest themselves in this old home traffic will be amply repaid for their trouble.

"So confident are we that this great potential market can be developed profitably to all, this company is about to embark on the largest advertising program it has ever undertaken. The dominant message will be 'Modernize your home.' We shall spend a great deal of money telling home owners why they should replace their antiquated plumbing and heating equipment with new.

"To be most effective our advertising must be supplemented by determined selling efforts on the part of every wholesaler and contractor all along the line.

"With that co-operation, our industry should be able to secure for itself a respectable part of that 24 billion dollars, with the result that the first six months of 1930 will be a time of good business for us all."

◆

President Harvey Sends Greetings to Members of National Pipe and Supplies Association

The following message is extended to members of the National Pipe and Supplies Association and to members of the plumbing and heating industry of the country by President C. F. Harvey:

"The holiday season, between Thanksgiving Day and New Year's, it seems to me, is an appropriate time to think of a few of the outstanding developments that have taken place since the convention last May.

"The most conspicuous event, of course, was the remarkable meeting of the representatives of the manufacturing and distributing branches of the industry with Commissioners Marsh and Flannery, which constituted our Federal Trade Practice Conference.

"The rules of fair trade practice adopted at the meeting were finally passed upon with some eliminations and changes, and returned to the committee in September. Copies were sent by the commission to all manufacturers and distributors for signatures and the acceptance and returns have been very gratifying to your committee.

"The formation of a corporation under the laws of Delaware, known as the National Plumbing and Heating Institute, was completed on November 18 and 19. Several manufacturing groups, such as boilers and radiation, fittings, pottery, enameled ware, etc., have formed institutes or associations, and these are eligible to membership in the corporation which started with the Western, Central and Eastern Supply Associations, together with the National Pipe and Supplies Association as initial members.

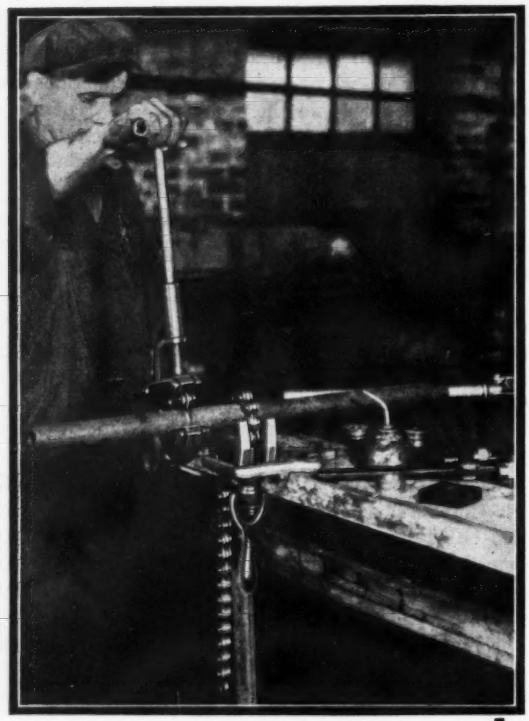
"The trade practice rules, as accepted by the Federal Trade Commission, are now in effect, and extreme care should be exercised on the part of each individual and firm in the industry to abide by these rules. A committee of the institute has been appointed which is hard at work on the problem of interpretation, and from time to time, bulletins will be mailed showing the progress of this committee. Committees are also at work on the problem of finding ways and means of disseminating information concerning the rules and for the purpose of

1855 - SEVENTY-FIFTH ANNIVERSARY - 1930

BY BUILDING ATTRACTIVE EXHIBIT ROOMS TO DISPLAY THE LATEST FIXTURES AND FITTINGS MOST ADVANTAGEOUSLY, AND BY INTENSIVE ADVERTISING

CRANE

IS DOING A SPLENDID JOB OF MERCHANDISING TO HELP YOU BUILD SALES. TO PROFIT FULLY FROM IT, BRING YOUR CUSTOMERS TO THE EXHIBIT ROOMS, AND KEEP A FILE OF ADVERTISEMENTS AND CONSUMER BOOKLETS IN YOUR OFFICE



Cut Costs with these *Better* Pipe Tools

ARMSTRONG BROS. *Better* Pipe Tools cut costs by saving time, making work easier, increasing output. Each has many improved features of design, is made of finer stuff—points of wear are of hardened or alloy steels, points of strain have been strengthened. Balance, that characteristic that gives handiness, has received careful attention and as a result there is a noticeable difference in the "feel" of these tools.

Generally the tools of this line are lighter, cleaner cut than ordinary. They are deserving of your careful study, are distinguished by the Arm-and-Hammer Trade Mark.

Patented

ARMSTRONG BROS. Chain Pipe Vise is light, compact, strong, and of large capacity.

Goes conveniently into a tool bag, attaches anywhere. Five improved features.

1. One-piece drop forged jaw.
2. Drop-forged base.
3. Drop-forged Handle.
4. Alloy Steel Nut.
5. Proof-tested Chain.

Write today for Catalog P-10 which shows and describes these improved pipe tools.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Avenue
Chicago, U. S. A.

ARMSTRONG BROS.

rendering assistance wherever deemed necessary to arbitrate differences of opinion. Definite progress has been, and is being made, and the request is made in the form of an appeal to the industry at large to be encouraged with the amount of work that has been accomplished and to be patient for the future developments.

"Never before has there been more reason for optimism in our industry than there is today. The sincere effort made by the manufacturers of wrought iron and steel pipe, in making for stabilization of the market for their commodity, and the effort made by the boiler and radiation manufacturers toward the same end, is further evidence of the enlightened attitude of manufacturers toward the problems of the distributor.

"It is only reasonable to expect that with these shining examples before them, that other manufacturing groups will undoubtedly make similar efforts in the same direction.

"There has come to my desk a very interesting statement taken from the November issue of 'The Shaft,' published by the Edgar T. Ward's Sons Company, which bears repetition for those who have read it, and will be food for thought for those who have not, and I suggest that our membership take this as New Year's Greetings from your president."

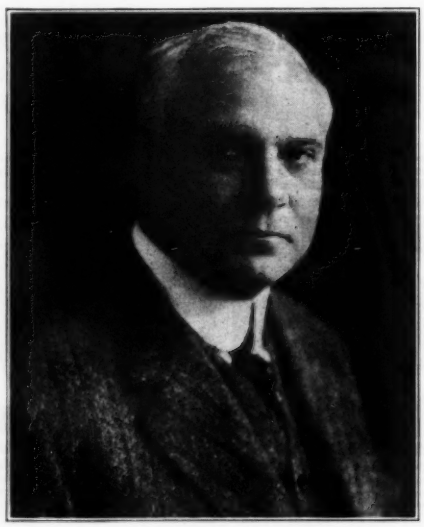
Sincerely yours,

C. F. HARVEY.

◆

Death of Archer A. Landon

Archer A. Landon, for many years connected with the American Radiator Co. and for a number of years vice president of that company, died in Buffalo, N. Y., on January 5. Mr. Landon was in his sixty-second year. Upon retiring from the American Radiator Co. several



Archer A. Landon

years ago, he formed the Landon Radiator Co., Inc., North Tonawanda, N. Y., which later became a subsidiary of Crane Co. Mr. Landon was born in Detroit, Mich., and had been a business leader in Buffalo for the past twenty years. During the World War he was personal advisor to President Wilson on labor conditions in this country.

A History of the Development of the Radiator

(Continued from Page 56)

and ventilating public and private buildings—by the use chiefly of steam or hot water" and which was "denominated" by the patentee as "The temperative heat-distributor."

The principle of this apparatus is illustrated as Fig. 9. It consisted essentially of a series of chambers, an inlet pipe for steam or hot water and a pipe for carrying away the condensed steam or cooled water. It is apparent that it represents a crude form of the steam radiator of a little later period.

These "heat distributors" were claimed to be constructible of "tin, copper, cast or wrought iron, or of any material known to furnish a good radiating surface." They were constructed of rectangular box form, Fig. 10, and it was claimed that the principle might be applied to a cylindrical form, Fig. 11. They were placed directly in the room to be warmed and thus presented an early type of direct hot water or steam radiator. Small legs are shown in the illustrations of Figs. 10 and 11. These legs raised the apparatus from the floor so that air might pass under and into the spaces between the heating sections and as it was warmed pass upward and out the top. Ventilation was assured by connecting an outside air duct directly to the underside of the radiator. In this particular patent, much stress was laid on the advantages of the tapering form of the radiating surfaces, but these claims were not borne out in practice.

About ten years later, June 12, 1860, a patent for a steam radiator was granted to A. P. Pitkin and herein the radiator, as we know it, begins to take on more definite form. Considerable trouble had been experienced through the bursting of connections due to unequal expansion or from permitting pressures within that were excessive for the material or manner in which it was used.

In describing his invention, this inventor recognized many requirements of radiator design which were passed on as the art progressed. In Fig. 12 the drawings accompanying this request for patent illustrate a cluster of five radiators. The patentee claimed improvement in steam radiators by "making a perpendicular radiator of one piece of metal with the two sides cast or made together, having intermediate connections to support the plates." He recognized the need of providing against unequal expansion or excessive pressure, of preventing collapsing when bolting the sections together, of assuring free entrance for the air between sections, for providing a ready means for collection of the condensed steam, and provision for relieving air from the radiator.

This radiator certainly possessed advantages over its predecessors in that it offered more economical construction through its manufacture without seam or joint; its compactness and hence relatively large amount of radiating surface for space occupied; its simplicity; its ready means of extension and the improved entrance for the air at the bottom, between sections.

On March 11, 1862, a patent for improvement in steam radiators was granted to Joseph Nason and Robert Briggs. The general appearance of this radiator is illustrated as

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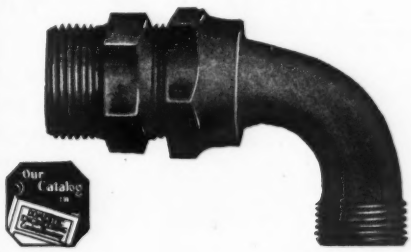

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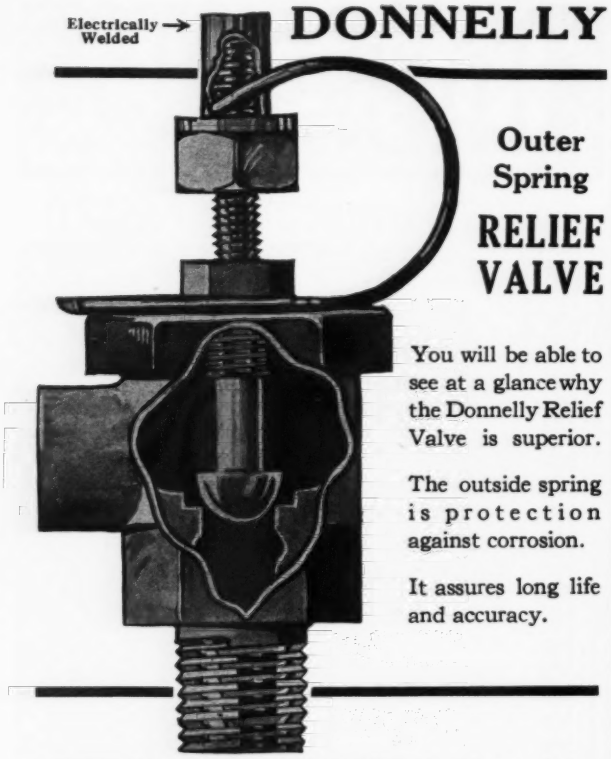
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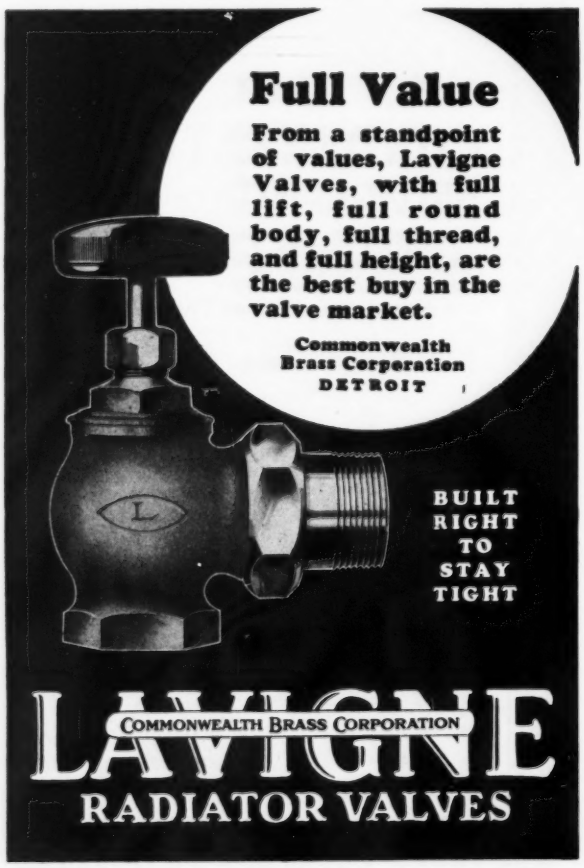
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Fig. 13. The claims applied primarily to the construction of the tubes of steam radiators.

The radiating tube of this improved Nason radiator is shown in Fig. 14, and consisted of the tube *a*, a diaphragm *b*, a steam-pedestal *c*, an inlet-pipe *d*, and an outlet-pipe *e*. In Fig. 14, the diaphragm *b* extends from the bottom of the tube *a* nearly to its top. This diaphragm was made of sheet-iron or other suitable material and of such width that when curved slightly and pushed into the tube, it would remain securely in place by friction contact.

Mr. Nason recognized the necessity of air removal as a function of effective warming with steam, and hence based his claim on the fact that the interior diaphragm provided means for establishing and maintaining an inward current of steam and an outward current of air on opposite sides of the diaphragm.

A modification of the application of the principle is illustrated at B, Fig. 14, where the interior tube *b'* extends from the lower part of the pedestal *c'* nearly to the top of the radiating tube *a'*. It was claimed that when steam was admitted to the pedestal *c'*, that it would flow upward and fill the tube *a'* while the air, being heavier, would flow down the interior tube *b'* and thence into the pedestal and into the outlet pipe.

In 1861, this type of radiator with the cast base, the tubes and baffle plate began to be installed in each room to be warmed just as present direct radiator practice. It was provided with a grill top and each tube was guaranteed to have one square foot of radiating surface which simplified calculation.

In the illustration of Fig. 13, separate control valves are shown for each row of tubes. The assembled radiator as placed on the market is illustrated in Fig. 15 as a 4-row type with one inlet. This type was known as Nason's standard pattern wrought iron welded tube radiator. Nason also made the "Improved" vertical wrought iron welded tube radiator. This type was made in 1-, 2-, 3- and 4-row patterns. Somewhat later, in the early 80's, there was added Nason's duplex pattern radiator which contained 8 rows of 24 tubes each. Its overall dimensions were 4 feet, 5½ inches by 24½ inches and as each tube contained 1 sq. ft. of surface, it presented 192 sq. ft. of radiating surface.

The rows of tubes were arranged in groups of two so as to permit air to pass up through openings in the base and thus allow the interior tubes to function nearly as efficiently as those on the exterior. These radiators were carried in stock, either plain or bronzed, and immediate delivery could be obtained.

Improvements in steam radiator design were constantly being made through filing of various patent claims but perhaps the most noteworthy advance in design was covered in the claim of Nelson H. Bundy under date of July 30, 1872, when he was granted a patent on improvement in tubes for steam radiators. This patent was among the first, if not the first, to be granted on the loop tube. It was indeed a forward step for it not only improved circulation for the radiator but materially increased the radiating surface.

Fig. 16 illustrates the construction of this Bundy tube while Figs. 17 and 18 illustrate the commercial development of the idea. It provided for the circulation of steam through upright radiator pipes without the intro-

Paragon

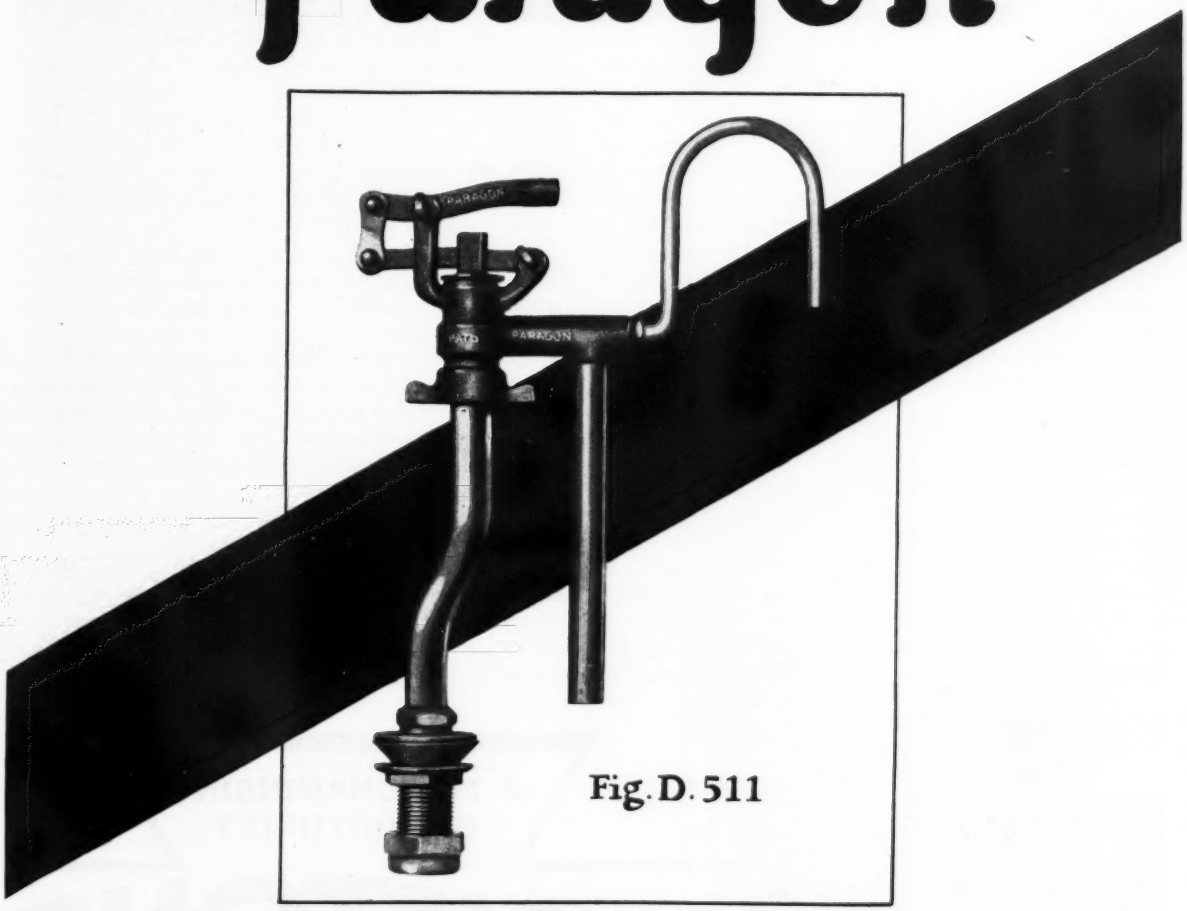

Fig. D. 511

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duction of any independent device or pipe. The radiator tube or pipe was cast with separate passages *aa* for its entire length, with the passages connected at the ends. A cast web, *b*, separated the passages. Thus, the passages were given an ellipsoidal shape and the area of radiating surface for a given diameter of radiator tube or pipe increased considerably. The upper ends of the pipes could be covered with a top as shown in Fig. 16.

The idea as presented through the Bundy patent seemed to provoke a desire to make more positive the circulation through the tube and we find a number of ideas advanced for the accomplishment of this end. Fig. 19 illustrates a construction for the base such that a projection on certain of the tubes would assure steam entering those pipes having these projections before it entered those without projections and thereby serve to drive the air quickly from the pipes with the result that a more rapid and quicker steam circulation was established and a more responsive heating of the radiator was obtained.

Another proposed plan for improving and assuring circulation is shown as Fig. 20. To say that it was cumbersome would be putting it mildly. Here the steam was admitted at *b*, to the base steam pipe *A*, to which the radiator tubes *E* and *F* were connected. The other base steam pipe *B* was similarly constructed and connected to *A* by means of the connecting pipe *D* through which water of condensation was carried. The steam entered at *b*, passed along the horizontal pipe *A*, up the vertical tubes E and along the hollow upper connection manifold *G*, down the vertical tubes *F* and along the horizontal pipe *B* to the outlet *C*.

The water of condensation, collecting in pipe *A* from the tubes *E* passed through connecting pipe *D* and the hollow sections *CC* to pipe *B* and there combining with condensation from tubes *F*, passed to outlet *c*.

This radiator, as proposed, presented one of the early types of direct-indirect radiator for it was built with an air base *K* on or in which the radiator rested. The tubes *H* and *I*, Fig. 25, were air pipes into which air from the outside was admitted through an inlet *L*, Fig. 20, with valve control. Or, by means of ports in the base, circulation of inside air was provided for.

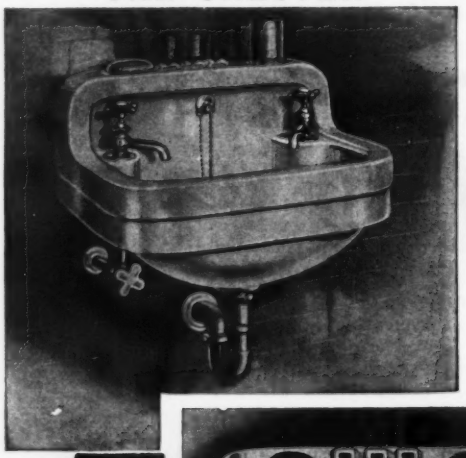
While the principle illustrated in Figs. 20 and 21 shows the trend in radiator design and consideration, the author is not informed as to any practical use of the patent.

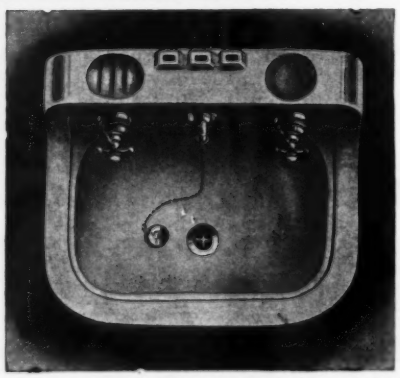
Fig. 21 shows another idea where the base was divided into an upper and lower chamber and there was proposed, the use of a two-way cock, for admitting steam and drawing water of condensation. Nor did this ever receive commercial consideration so far as the writer is informed.

Other ideas of radiators from the inventive mind are shown as Figs. 22 and 23.

The prototype of the column radiator made its appearance between 1875 and 1880. Figs. 24 and 25 illustrate, respectively, a two- and a three-column type. The underlying principle of that shown as Fig. 24 was a spiral twist given the channels of the tubes to provide

THE CHESTER





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an auger-like aperture which, it was claimed, would assist in the quick removal of condensation.

The radiator illustrated in Fig. 25 claimed distinct improvement in circulation through providing two or more descending arms having a large amount of radiating surface to insure rapid condensation of the steam, and a central arm or channel directly in the path of the entering steam so as to assure positive entrance thereinto and rapid flow to the top of the radiator. Special construction at the inlet of the central tube was used to insure the steam entering.

While the vertical tube, wrought-iron radiator and the loop type radiator were designed and built for steam, it was not long before it was applied to hot water radiators as well. Early in the history of this type such a radiator was produced by Bartlett, Hayward & Co. The top of their radiator consisted of a hollow, cast-iron casing into which tubes were screwed, exactly as they were screwed into the base of the Nason steam radiator. The free ends of the pipes were left open and passed through corresponding holes in the upper side of the radiator base and there expanded, similar to the expanding of boiler tubes. The bottom of the base was then attached with screws and a copper or other suitable gasket used to make a tight joint.

Tests with these radiators showed that, when the radiator was relieved of air, bottom connections could be used on both ends with practically equally good water circulation and heat emission, which contradicted the idea that the supply should always be made at the top.

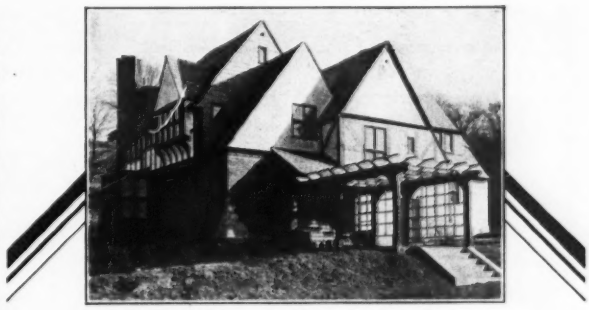
To the A. A. Griffing Iron Co. (Samuel D. Tompkins, an officer of the company) has been credited the joining of cast-iron loops with a hollow top casting and of making the first cast-iron loop hot-water radiator.

In the construction of Bundy-Tompkins hot water radiator the loops were screwed into the base exactly as for a steam radiator. The cap or top was cast hollow, with a series of tapped openings through it. The upper opening was made large enough to permit passing short brass nipples used for joining the head of the loops with the lower holes. These lower holes and those in the heads of the loops were tapped in one operation so they coincided in taper and thread register. The short threaded taper tube or nipple, which was made of brass and had a square hole in it for a wrench, was then forced into the hole and into the head of the loop after which the hole was closed by means of a hollow plug. Then an entablature was placed over the whole to cover the plugs and present a pleasing radiator appearance.

The radiator as first constructed is shown in section as Fig. 26. Note the partition at *a* which was introduced at first as necessary to turn the water into the head of the radiator and prevent its passing through the radiator from inlet to outlet.

This was no other than evidence of the prevalence of the old idea that a continuous current was necessary for circulation. The added resistance caused by the abrupt turn to force the water upward through the end tubes of the radiators and their nipples as noted by arrows, Fig. 26, before it reached the other tubes was high, so workmen often punched out the division *a* with the result that circulation was improved, better heating resulted and the division *a* was eventually omitted entirely.

Through the 80's and 90's and early in the 20th cen-



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tury, cast-iron radiator design passed through various stages of decoration and application. Examples of many of the types in use during that period are illustrated by Figs. 27 to 35 with descriptive notes of their characteristics.

A Bronze-Welded Water Supply Line

(Continued from Page 68)

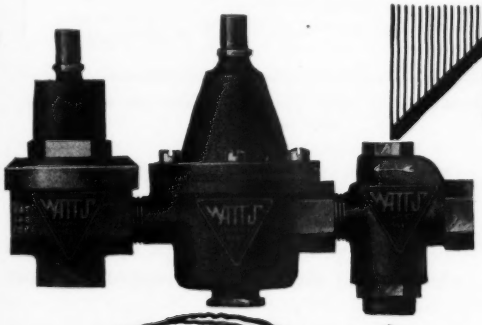
welded cast iron pipe installations. Some time ago, it was found in investigations carried out on experimental installations of bronze-welded pipe that the machining of a beveled edge for welding had the effect of exposing the small flakes of graphite which are typical of cast iron structure. It has been found that the bond between the deposited bronze and such cast-iron machined surfaces is of uncertain adhesion due to the presence of these graphite flakes.

Acting on the results of these investigations, it has since then been the practice on all installations of bronze-welded cast iron pipe to subject the ends of the pipe, after beveling, to an oxy-acetylene flame until they become a dull red, after which they are allowed to cool. This burns up the graphite flakes and makes the surface adaptable to the bronze-welded joint. Usually this searing is done at the pipe foundry, but it can be performed on the job if necessary. It helps also in making the actual welding easier. The bronze tins quickly and easily on the seared edges. Naturally there is a distinct saving of time, and, it is believed, a good effect on the final efficiency of the lines.

The pipe was delivered on the job in 12-foot lengths, which the shear-vee joint machined, and lined up on the wharf for welding. It was not laid on skids as is usual in welding pipe lines in the field, but was laid flat on the surface of the wharf with triangular blocks nailed on each side to hold it in line and to keep it from rolling away while being turned. These blocks can be seen in Fig. 4.

All welds were of the shear-vee type except the welds that were made to fasten the flanges in place. These flanges were to be used in making the connections for the pumps (Fig. 2), and also were used on the bay end of the job for connecting strainers to the end of the line. Eight flanges were welded to the pipe, as shown in Fig. 3. The pipe is shown in Fig. 4, in process of welding. The operators can be seen making welds in the 6-inch line, and in one of the 8-inch lines. Portable welding units were used, aiding materially in speeding up this work. The welds were all made with a ¼-inch bronze welding rod. On a number of these welds a time record was kept, and the average time taken for a 6-inch weld was about 20 minutes, and for an 8-inch weld about 25 minutes, with a No. 8 welding tip. The amount of bronze used for the joints was 1½ pounds for the 6-inch and 2 pounds for the 8-inch welds.

After the welding was completed, as shown in Fig. 4, the three lines were subjected to a hydrostatic pressure of 125 pounds. This pressure was held for about 1 hour and everything was found to be satisfactory.



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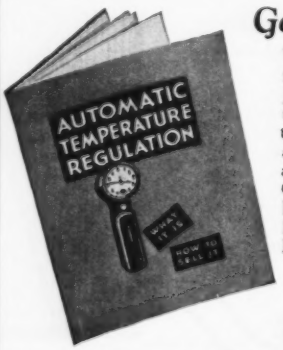

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Combination House and Fire Tanks

(Continued from Page 66)

a 4-inch pipe the invert is, of course, just 2 inches below the center line of the pipe. Consequently the center line of the house supply line (should it be 4-inch size) would be 2 inches higher than the theoretical water line which must be maintained for fire service.

It has already been computed that the number of cubic ft. of water contained in the 5000 gallons of fire reserve is 667 cubic ft. Also that the area of the bottom of the tank is 130 sq. ft. Therefore, the height of the theoretical water line for fire reserve will have a distance above the bottom of the tank of

$$667 \text{ cubic ft.} \div 130 \text{ sq. ft.} = 5.13 \text{ ft.}$$

and this is equal to 5 ft. 1⅛ inches, to which must be

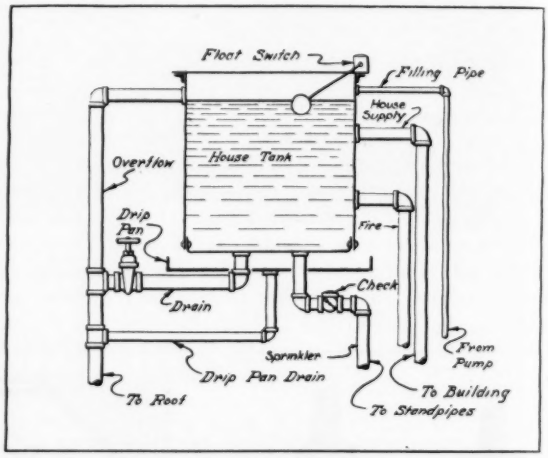


Fig. 3.—Combination tank used for house, fire and sprinkler service

added the 2 inches from the invert to the center line of the 4-inch house supply line, or

$$5 \text{ ft. } 1\tfrac{1}{8} \text{ inches} + 2 \text{ inches} = 5 \text{ ft. } 3\tfrac{1}{8} \text{ inches.}$$

The distance would probably be made 5 ft. 4 inches on the tank, which would give a tank arranged as shown in Fig. 3.

Triple Combination Tank

In buildings such as theaters, the condition of storing three different quantities of water for three different purposes sometimes will be encountered. These three services are house, standpipe, and sprinkler supplies. Where the combination tank is put in a penthouse so that it is protected from freezing the same scheme as shown in Fig. 3 may be used, placing the sprinkler water at the bottom of the tank, taking the standpipe water off of the side of the tank, with the invert at the theoretical water line of the sprinkler water, and taking the house supply line off of the side still higher up (with the invert at the theoretical water line of the standpipe water).

Should the combination tank be an elevated tank supported on a small tower, and with no protection around the sides to prevent freezing, this method of side connections will not be satisfactory as such connec-

tions would be subject to freezing. For such tanks, all of the pipes are carried from the bottom of the tank down to the building and boxed in with insulation to prevent freezing. Then, some method of heating the tank, so as to hold the water above 40 degrees Fahr., is used. This may consist of a steam and return line run up into the tank with a radiator section near the bottom of the tank, or an indirect steam heater with a circulation line.

Such an arrangement will protect the lines from the bottom of the tank to the building, but how are the supply pipes to be carried up to the proper height in the tank? The answer is that, if these pipes cannot be run outside of the tank, they must be run inside of the tank. Owing to the possibility of corrosion in years to come, it is necessary to make any pipes run inside of this style of tank, of brass. Of course, the

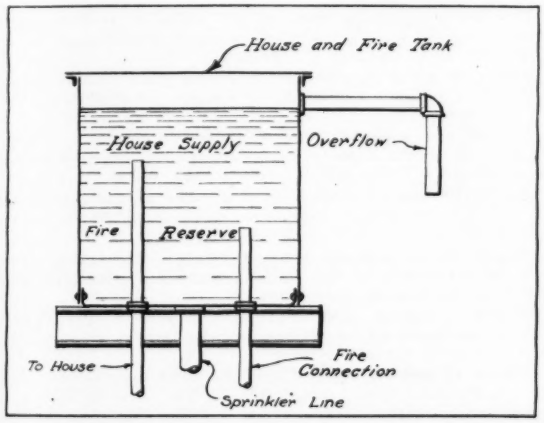


Fig. 4.—Combination tank for triple service with piping concealed inside of tank

bottom connection for sprinklers simply comes off of the bottom of the tank and enters the insulating box, no special treatment being required on this pipe. The standpipe line, however, is carried through the bottom and extended up to the theoretical water line of the sprinkler reserve, and the house supply line is similarly treated except that it is carried up to the theoretical water line of the standpipe water reserve.

This gives an arrangement somewhat similar to that shown in Fig. 4, but if an indirect heater is used, there will be another line to be carried up in the tank, this line running up into the house reserve. The reason for this is that the pipe coming from the bottom connection in the tank is tapped to supply the water to the indirect heater and this is done so as to draw off the coldest water in the bottom of the tank. After the water passes through the heater a separate line must be run from the heater up into the tank to a point near the top so as to prevent emptying the tank by means of this by-pass.

◆

Education raises persons above their surroundings and makes them masters of themselves rather than merely being creatures of circumstance. It is not enough merely to know how to get a living, it is necessary to know how to live.—*Calvin Coolidge.*

The Lives of Your Clients Are In Your Hands

PREVENTION RATHER THAN CURE

Modern Garage Drainage Installation is equally as essential as the Prescriptions of Medical Directors.

Architects, Sanitary Engineers, and Contractors will safeguard the health and property of their Clients by specifying Dehn's *PeerlesS* Garage Drainage System.

Catalog with full information upon request. Your jobber can supply you.

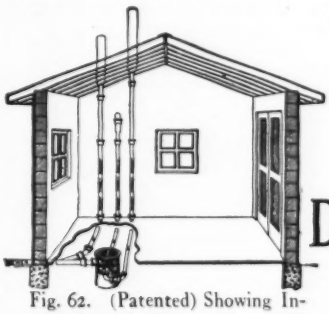
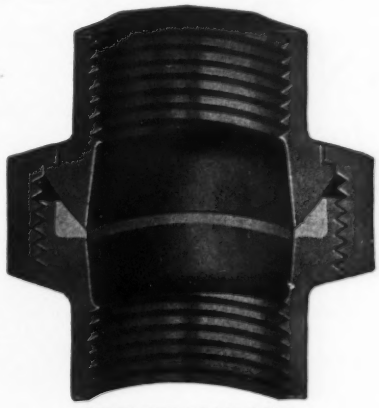


Fig. 62. (Patented) Showing Installation of Dehn's "PeerlesS" Garage Drainage System.

Compound Injector & Specialty Co.
ESTABLISHED 1897
GEORGE J. DEHN, S. E., PRESIDENT
Originators, Designers and Sole Manufacturers of
DEHNSANIGARD
THE QUALITY GOODS
Trade Mark Registered

419-421 D. North Laramie Avenue Chicago, Ill., U. S. A.

IMICO UNIONS



NOTE THE BRASS DISC

Made of Refined Malleable Iron with Brass Seat Inserted in Place by Powerful Pressure So That It Cannot Become Detached.

Approved by Underwriters' Laboratories.

ILLINOIS MALLEABLE IRON CO.
Chicago, Ill.

Manufacturers Full Line Iron Pipe Fittings

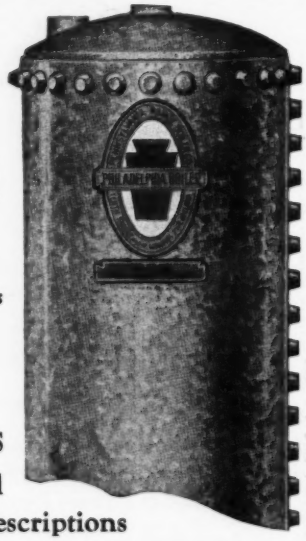
Throughout our branches we have assembled many complete bath rooms to assist the plumbers and their clients to select proper fixtures. You are invited to use these facilities.

N. O. NELSON MFG. CO.
Administration Office and Display Rooms, St. Louis, Mo.
BRANCHES THROUGHOUT THE MIDDLE WEST

Range Boilers

TANKS *for* Automatic Heaters

To Your Specifications



COIL BOILERS
STORAGE TANKS
Pressure and Special
of All Descriptions

Riveted and Welded — Black and Galvanized

PENNSYLVANIA RANGE BOILER CO.
Main Office and Plant:
S. W. Cor. 24th and Washington Ave., Philadelphia

Convention Dates

January 13, 14 and 15, 1930—PRESIDENTS' AND SECRETARIES' CONFERENCE—The eighth annual conference of the presidents and secretaries of associations in the plumbing and heating industry, to be held at the Congress hotel, Chicago, Ill.

January 14, 15 and 16, 1930—WISCONSIN—The annual convention of the Wisconsin Master Plumbers' Association, to be held in Milwaukee, with headquarters at the Hotel Schroeder.

January 15 and 16, 1930.—SOUTH DAKOTA—The annual convention of the South Dakota Retail Plumbers' Association, to be held at Rapid City, South Dakota. Convention headquarters at Alex Johnson hotel.

January 21, 22 and 23, 1930.—ILLINOIS—The annual convention of the Illinois Master Plumbers' Association, to be held at Rockford with headquarters at the Hotel Faust.

January 27-30, 1930.—A. S. H. V. E.—The thirty-sixth annual meeting of the American Society of Heating and Ventilating Engineers to be held at Philadelphia, Pa.

January 28 and 29, 1930—IOWA—The annual convention of the Iowa Master Plumbers' Association, to be held at Sioux City.

February 3 and 4, 1930.—WEST VIRGINIA—The annual convention of the West Virginia State Association of Master Plumbers to be held at Clarksburg.

February 4 and 5, 1930—MINNESOTA—The annual convention of the Minnesota Retail Plumbers' Association, to be held in St. Paul.

February 4, 5 and 6, 1930.—OHIO—The annual convention of the Ohio State Association of Master Plumbers to be held at Springfield, with headquarters at the Hotel Shawnee.

March 10 and 11, 1930—KANSAS—The annual convention of the Kansas Master Plumbers' Association, to be held at Salina.

March 10, 11 and 12, 1930.—INDIANA—The thirty-fourth annual convention of the Indiana Society of Sanitary Engineers, to be held at Fort Wayne.

March 11 and 12, 1930—MAINE—The annual convention of the Maine State Master Plumbers' Association, to be held at the Falmouth hotel, Portland.

March 17 and 18, 1930—MISSOURI—The annual convention of the Missouri State Association of Master Plumbers, to be held in St. Louis.

April 7 to 12, 1930.—AMERICAN OIL BURNER ASSOCIATION—The seventh annual convention and exposition of the American Oil Burner Association, to be held at the Stevens Hotel, Chicago, Ill.

April 8 and 9, 1930—NEW YORK—The annual convention of the New York State Master Plumbers' Association, to be held in New York City.

May 5 and 6, 1930.—FLORIDA—The ninth annual convention of the Florida State Association of Master Plumbers and Heating Dealers, Inc., to be held at Bradenton.

May 5, 6 and 7, 1930—N. P. S. A.—The annual convention of the National Pipe & Supplies Association, to be held at Pinehurst, N. C., in the Carolina hotel.

May 12, 13, 14, 15 and 16, 1930—CALIFORNIA—The annual convention of the State Association of Master Plumbers of California, to be held at Sacramento. Convention headquarters will be at the Hotel Senator.

May 19, 20 and 21, 1930—PENNSYLVANIA—The annual convention of the Pennsylvania Master Plumbers' Association, to be held at the Bellevue-Stratford hotel, Philadelphia.

June 24, 25 and 26, 1930.—N. A. M. P.—The forty-eighth annual convention of the National Association of Master Plumbers, at Boston, Mass. Sessions at Grand Hall of Mechanics Building. Headquarters at Statler Hotel.

COMING TRADE EVENTS

January 13, 1930—The annual Milwaukee Apprenticeship Conference to be held at the Hotel Pfister, Milwaukee, Wis.

January 18, 1930—The annual dinner dance of the New York University Heating and Ventilating Engineers Society, to be held at the Hotel Martinique, New York City.

January 27, 28, 29, 30 and 31, 1930.—The International Heating and Ventilating Exposition, to be held at the Commercial Museum, Philadelphia, Pa.

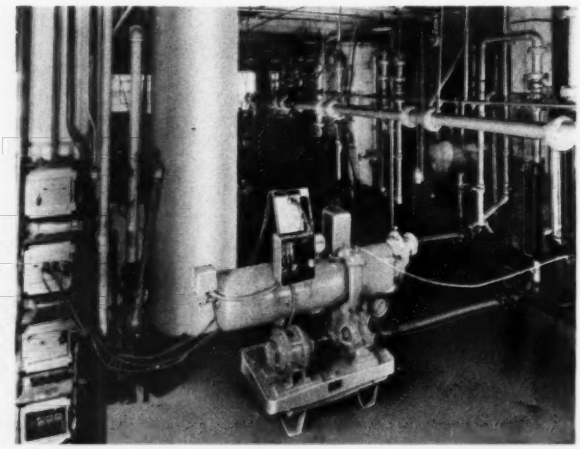
March 3-7, 1930.—The first showing of the National Industrial Exposition, to be held at the Hotel Stevens, Chicago.

June 23-27, 1930.—Exposition in connection with the annual convention of the National Association of Master Plumbers, in the Mechanics Building, Boston, Mass.

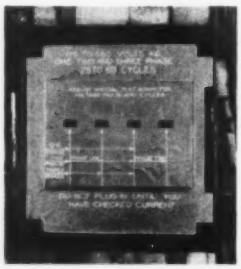
Stretching square foot pump ratings will not fill the bill

Combined Air and Water Capacity determines the amount of radiation a heating pump can serve

ALTHOUGH it is usually possible to calculate within close limits the volume of condensation to be removed from a steam heating system, the quantity of air to be exhausted may vary greatly. The degree of tightness, the efficiency of radiator traps, the temperature of the condensate, the cooling effect of the return piping, the use of lifts, the relative quantity of fan surface installed, the vacuum to be maintained, the necessity of introducing high temperature water into return piping near the pump, and the use of long runs to the radiator, are certain to vary.



GENERAL VIEW OF NASH TEST PLANT



TYPE OF SWITCHBOARD PLUG-IN BOX IN NASH TEST PLANT WHICH FURNISHES ELECTRIC CURRENT OF ANY PHASE, VOLTAGE AND FREQUENCY

No wonder the volumes of condensation and air to be removed from two such systems having the same radiation surface may differ greatly!

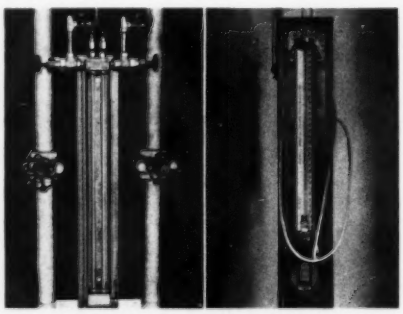
So, the determining factor in recommending the correct size of vacuum pump for a given heating system is the maximum quantity of air the pump will ever be called upon to remove from the system.

Nash Engineers have recognized these facts for years. They have always rated Jennings Return Line Vacuum Steam Heating Pumps on the basis of their combined water and air capacity.

CAPACITIES OF
JENNINGS VACUUM HEATING PUMPS

Pump Size	Equivalent Direct Radiation Square Feet	Water Capacity G P M	Air Capacity Cu. Ft. Per Min.	Orifice Diameter Inches	MOTOR HORSEPOWER			
					10 Lbs.	20 Lbs.	30 Lbs.	40 Lbs.
T	2,500	4	3	1/64	1/3	1/2	1	1 1/2
U	5,000	9	3	1/64	1/3	1/2	1	1 1/2
V	10,000	14	6	3/32	1	1	1 1/2	2
B	16,000	22	9	3/16	1 1/2	2	3	5
C	26,000	35	15	1/4	2	3	5	5
D	40,000	60	19	5/32	3	5	5	7 1/2
E	65,000	90	34	3/8	5	5	7 1/2	10
F	100,000	140	50	7/16	7 1/2	10	15	15
*G	150,000	200	102	9/16 & 5/16	10	15	UPON REQUEST	
*H	300,000	400	171	2-3/16 & 1-9/16	UPON REQUEST			

* The last two sizes are not of the manifold type.



TYPES OF VENTURI METER AND VACUUM MANOMETER USED IN TESTING JENNINGS PUMPS

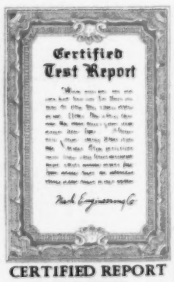
Jennings Pump Capacities Are Determined by Actual Tests

This combined capacity is definitely established before each pump is shipped from the factory. Exhaustive tests conducted in a completely equipped laboratory accurately determine the volume of water in g.p.m. that the pump can remove from the receiving tank under a prescribed vacuum and deliver against a specified discharge pressure. Simultaneously, a calibrated orifice checks the number of cu. ft. per min. of air that the pump can withdraw from the receiving tank and discharge into the atmosphere. A certified report of these tests is furnished to the customer on request.

STANDARD TEST ORIFICE

Ratings Are Reliable Under Varying Conditions

Jennings Vacuum Heating Pump ratings are reliable. They are based on actual performance. A Jennings Pump, with the capacity given in the table, can be depended on to serve *any* reasonably well installed system, for which it is recommended, for the life of the building.



CERTIFIED REPORT OF TEST

Jennings Pumps

NASH ENGINEERING CO.
SOUTH NORWALK, CONN., U. S. A.

Ventilation and Public Health

This is the season of the year when our thoughts turn to heating and ventilation of homes, offices and workshops. There are three things that we ought always to keep in mind for proper air conditions:

First: Temperature. This should be 68 or 70 degrees Fahrenheit.

Second: Humidity. The relative humidity of the room in which we live or work should be 50 to 60 per cent.

Third: Movement of Air: This is essential in order that the volume of air surrounding our bodies be constantly changed.

The discomfort which we experience in our crowded offices, public halls, and homes is caused by improper temperature, humidity and lack of air movement.

Most of our apartments and office buildings are super-heated, as a result of which resistance is lowered and we become more susceptible to colds and other respiratory infections.

When rooms are superheated, the moisture given off from our bodies is evaporated too quickly and we feel cold. When the temperature range is from 68 to 70 degrees Fahrenheit the evaporation from our bodies balances heat production and we feel comfortable providing there is the correct humidity.

Normally a certain heat interchange must take place between the body and the air surrounding it; and to facilitate this, the air must be in motion so that the volume of air around our bodies may be changed as rapidly as it is heated by the warmth that is radiated from our bodies.

Milwaukee Company Makes Plant Addition

The Milwaukee Flush Valve Co. of Milwaukee, Wis., has recently completed a new two story addition to its Milwaukee plant. The new building, which is of concrete construction and entirely fireproof, will house the new foundry. This structure will allow the company 8,000 sq. ft. of additional floor space. All new machinery installed will be automatic.

◆

Appointed to Board of Examiners

R. D. Rennie, master plumber at 1058 Hawthorne avenue, Portland, Ore., has been appointed to the board of examiners for the city plumbing division.

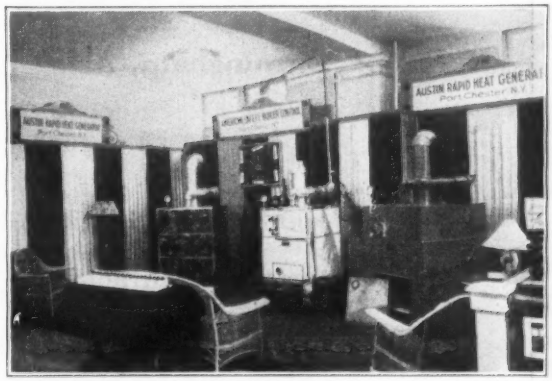
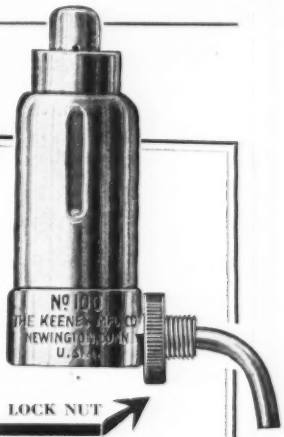


Exhibit of the Austin Heat Transference Corp., of Portchester, N. Y., at the New York Power Show

KEENEY AIR VALVES



LOCK NUT

Neat in appearance and easy to install, being part of the valve.

"Think of Keeney First"

Reasons for Positive Performance

A. Vent opening enclosed by cap insures clean Valve.

B. Pin has a bullet shaped point to prevent sticking and is made of non-corrosive metal.

C. Asbestos ring or muffler helps to make the Valve more silent.

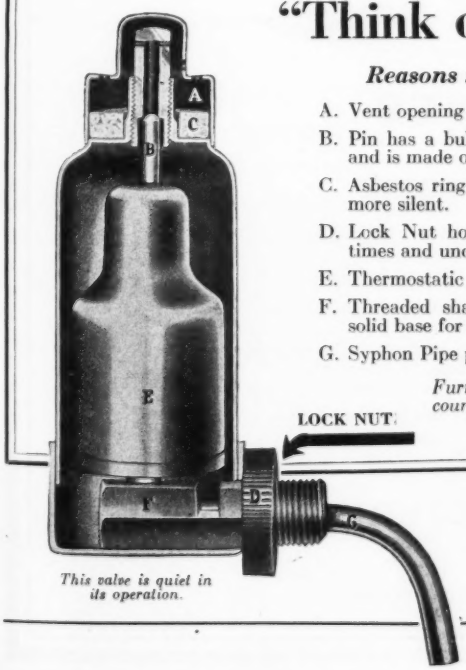
D. Lock Nut holds Valve in upright position at all times and under all conditions.

E. Thermostatic Float.

F. Threaded shank is hexagonal shaped. Makes a solid base for Float to rest on.

G. Syphon Pipe placed low drains all the water.

Furnished packed in attractive counter and window display cartons.



This valve is quiet in its operation.

THE KEENEY MFG. CO.

NEWINGTON :: CONN.

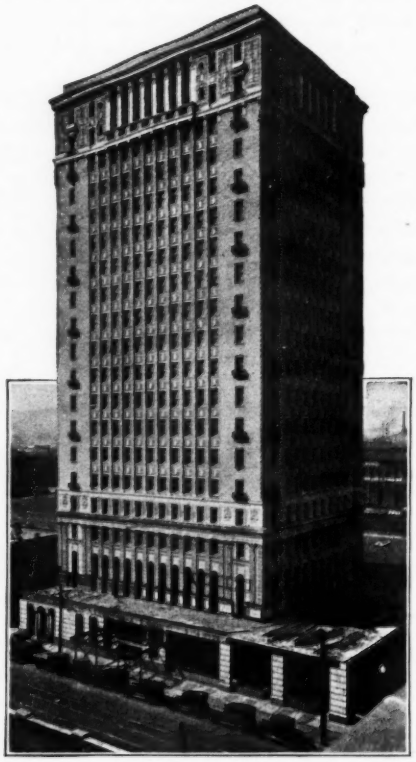
THOMAS JEFFERSON HOTEL

Birmingham, Ala.

Architect
D. O. Whilldin

Plumbing Contractors
Pate Plumbing Co.

Plumbing Jobbers
Jefferson Supply Co.



Watrous

FLUSH VALVES
Used Throughout

Write for full details to

PLUMBING DIVISION

Watrous Flush Valves—Duojet Closets—Self-Closing Basin Cocks—Combination Lavatory Fixtures—Pop-Up Wastes—Liquid Soap Fixtures, etc.

Sold by leading plumbing jobbers throughout the United States

THE IMPERIAL BRASS MANUFACTURING COMPANY
1231 West Harrison Street **CHICAGO**

BRANCH SALES OFFICES IN ALL PRINCIPAL CITIES

THE TRADE

NEWS FOR PLUMBING AND HEATING CONTRACTORS

Chicago Contractors Elect Officers

The Plumbing Contractors' Association of Chicago, Ill., has elected as officers for the year 1930, Rupert J. Weber, president; James W. Fettes, vice president; Peter M. Munn, secretary; and Robert E. Murphy, treasurer.

◆

Cleveland Heating and Piping Contractors Elect Officers

The Heating and Piping Contractors Cleveland Association held its annual election of officers at a recent meeting at the Hotel Statler, Cleveland, Ohio. E. L. Heinle was elected president; E. Maurer, vice president; Adolph Weiss, secretary; and W. R. Rhoton, treasurer.

The board of directors is composed of A. C. Banko, W. F. Hann, George Spohn, R. W. Mayer, Charles Holmes and C. W. Neitzel. Following the business meeting a banquet was served and professional entertainment was furnished for the enjoyment of the members present.

◆

Milwaukee Association Holds Annual Election

The Master Plumbers' Association of Milwaukee, Wis., held a meeting on December 17 at which it elected the following officers for the ensuing year: Walter Dusold, president; Henry C. Weber, vice president; Arthur F. Boettcher, secretary; Peter Vogt, treasurer, and Henry A. Wegner, sergeant-at-arms.

With his election to the presidency at the December meeting, Mr. Dusold enters upon his fifth year in that position. Charles Pelunek, the retiring secretary, who has held that office for eighteen years, declined re-election.

◆

Bronx Masters Elect Officers

The New York City Master Plumbers' Association, Bronx Borough, at its annual election of officers, chose Harry Sugarman as president; Frank Habeck, vice president; S. George Arnone, secretary, and S. H. Welch, treasurer.

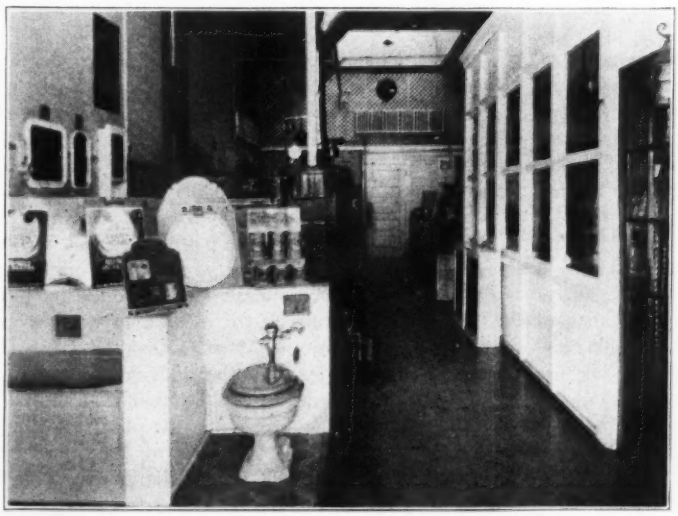
◆

Philadelphia Association Elects Officers

The Master Plumbers' Association of Philadelphia, Pa., at a meeting on January 2 at the club rooms of the organization, re-elected Maney J. Feeney, president; Robert H. Pflug-Felder, secretary; George Moeller, treasurer, and E. H. McKay, sergeant-at-arms. William Boal was chosen vice president, and the following were made members of the board of directors: National President John A. Quinn, George F. Uber, Howard Neilson, Harold Asquith, William Beahm and Robert G. Weir.

David S. Sanderson of Drexel Hill, Pa., president of the Pennsylvania state association, addressing the meet-

Well Equipped Showroom in Pensacola, Fla.



THE accompanying picture shows a view of the well-stocked showroom maintained at 280 North Palafax street, Pensacola, Fla., by J. D. Johnson. This showroom contains plumbing and heating equipment set up as in an actual installation, so that it can be demonstrated as an aid to merchandising.

ing, briefly outlined the work he and other state officers have been doing in the way of forming new organizations. President Sanderson said that the need most obvious to him, on his five thousand mile trip throughout the state visiting local associations and forming new ones, is further education along the lines of better business conduct and merchandising.

E. D. Swoyer of Allentown, Pa., state vice president, also touched on the organization work that has been accomplished during the latter half of 1929. James F. Rhoads of Chester, Pa., state secretary, presented an interesting report along these same lines.

Secretary Robert H. Pflug-Felder read a letter from the Jobbers' Credit Association of Philadelphia which called attention to the ruling, governing credit extensions, that is to be effected February 28 by that organization. The letter indicated that after the date mentioned no credit would be extended contractors whose bills were not paid within ninety days. A general discussion followed which terminated with an acceptance of the plan. President Feeney, who presided, was instructed to request a five per cent discount for those making prompt payment of bills.

Herbert M. Packer, chief of the Bureau of Housing and Sanitation of Philadelphia, who is credited with having co-operated closely with the association in its efforts toward better sanitation within the city, spoke on the new code that is now under discussion.

The members of the Women's Auxiliary were guests at a buffet supper which followed the meeting.

◆

Wisconsin Announces Convention Program

The Wisconsin Master Plumbers' Association has recently announced the program for its thirty-sixth annual convention which will be held in Milwaukee, January 14, 15 and 16, at the Schroeder hotel. The convention will open at 10 a. m. on January 14 with an address of welcome by W. W. Dusold, president of the Milwaukee Master Plumbers' Association. In the afternoon, there will be addresses by Daniel W. Hoan, mayor of Milwaukee; Peter Cleary, Leon H. Curtice and M. Hansen; and the session will be closed with reports from the various zone presidents.

The speakers for Wednesday will include Dr. Stewart Scrimshaw, professor of industrial relations at Marquette University; John N. Van der Vries, manager of the Chicago office of the United States Chamber of Commerce; F. W. Swanson, of the Globe Machinery & Supply Co., Des Moines, Ia., president and commissioner of the National Plumbing and Heating Institute; Frank R. King, state plumbing inspector; and Walter Simon, supervisor of apprenticeship training of the Wisconsin industrial commission. The session will close with the election of the board of directors.

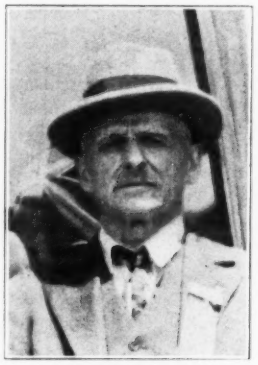
Thursday morning will be devoted to a brisk business session and addresses by Robert E. Murphy of Chicago, National director; John A. Quinn of Philadelphia, national president; and E. L. Flentje, manager of the Plumbing and Heating Industries Bureau, Chicago.

The annual dinner dance and entertainment of the convention will take place Thursday evening in the Chrystal ballroom of the Schroeder hotel, with members of the Ladies' Auxiliary as guests.

New Association Formed in Ogden, Utah

The formation of the Association of Sanitary and Heating Engineers of Ogden, Utah, was announced by A. H. Higham, president of the Utah state association, at the regular semi-monthly meeting of the Salt Lake City association, held December 19.

The organization of the new association followed a meeting at Ogden of the masters of that city with National Director Charles Swinnerton of Los Angeles, Calif.; Henry H. Bockholt, past president of the Utah state association and Mr. Higham. Mr. Swinnerton spoke on the advantages of organization and the benefits of good fellowship.



K. Bachman

The Ogden association perfected its organization the next week and elected the following officers: K. Bachman, president; A. Sangberg, vice president; and A. Wharton, secretary-treasurer. At present the association has thirteen members, but the officers expect to secure the few additional masters who have not yet joined.

Among the committees appointed is one on sanitation which will take up the matter of securing a plumber as plumbing inspector with the city commission, as a non-member of the industry has been acting in that capacity.

President Parley G. James presided at the meeting of the Salt Lake City association, which was attended by representatives of twenty-two firms. The entertainment committee, consisting of Joseph F. Carthey, Jack Reeve and George M. Whitely, announced that the holiday party planned with the ladies would be held shortly after the first of the year.

Numerous members expressed their sorrow at the death of William Latey, assistant city plumbing inspector for many years, and extended their sympathy to his widow and family.

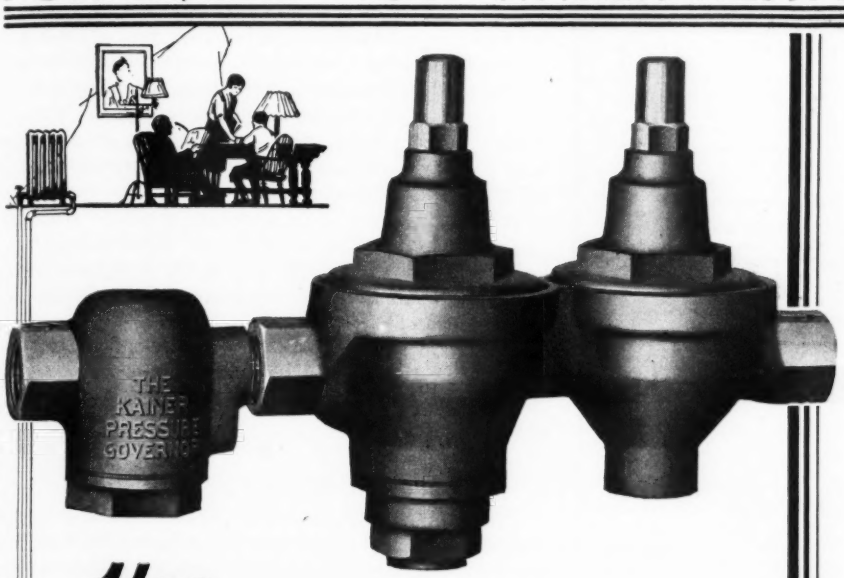
◆

Chicago Merchandising Group Makes Satisfactory Progress

The merchandising group of the Chicago Plumbing Contractors' Association, Chicago, Ill., is making satisfactory progress in the effort to promote the sale of plumbing goods by master plumbers. During the Christmas holidays the members of this group arranged an attractive uniform window display featuring a line of closet seats, brass goods and automatic gas water heaters.

In this campaign the master plumbers met with an immediate and enthusiastic response from manufacturing firms who actively co-operated with the master plumbers in arranging decorations for a suitable window display. While no great volume of sales resulted from this innovation, the leaders of the movement recognize its potential value in educating the public that the plumbing shop is the natural retail outlet for plumbing goods and accessories. It is the intention of the merchandising group to foster and encourage the master plumber to make his place of business inviting and attractive to the

FOR EVERY HOT WATER HEATING SYSTEM



Use Kainer Specialties

to Insure Satisfaction

The KAINER Pressure Governor is a compact, single unit that may be installed on any hot water heating system, old or new, securing the following advantages:

—Reduces the cost of a hot water layout.

—Eliminates expansion tank and fittings (with dangers of freezing or overflowing).

—Removes a big source of heating troubles and makes a better job.

—Simplifies installation.

—Saves your time and your customers' money.

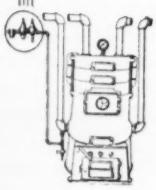
—Increases your profits and builds good will.

—Speeds up circulation and increases heat transmission.

—Reduces fuel consumption.

The KAINER Pressure Governor is unequalled for either new jobs or remodelling. An attractive, quick-selling item that allows a generous margin of profit on every sale. It is easy to sell and stays sold.

Write for Special Circular showing List Prices



KAINER & COMPANY
CHICAGO
761-771 MATHER STREET
Manufacturers

KAINER
Pressure Relief Valve
Furnished in two models for various pressures. For use on domestic range boilers and hot water heating systems.

KAINER
Pressure Reducing Valve
Installing this valve on old or new systems consisting of tank and relief valve only, makes the system fully automatic.

KAINER
Filter
Prevents particles of rust, dirt and scale from fouling the valve seats, insuring contipuous, trouble-free operation.

KAINER
Sylphon Regulator
Assures even water temperature. Prevents boiling and loss of fuel.

KAINER
Pressure Gauge
Should be used on all closed systems.

A SIGN OF THE TIMES
When you see the Ohio Brass trade mark you may know the product so marked is of the first quality.
Plumbing and Heating contractors are accepting O-B Valves as standard because they never fall down on the job.
Ask your Wholesalesman, He knows!
OHIO BRASS COMPANY
741V Mansfield, Ohio
Flexitite Disc Gate Valve Patented

SANI-TEED PLUMBING PRODUCTS
"PALMER"
IMPROVED SEWER GAS and BACK WATER TRAP
The Valve proper in the Palmer Back Water Trap is made of indestructible, non-corrosive, white metal. This valve cannot be thrown from its hinge and at the slightest back pressure it fits up absolutely tight against the hand-ground seat.
Write for full details.
J. A. ZURN MFG. CO., ERIE, PA.

Stop this!
WOW
Eliminate those unexpected "shots" of hot and cold water in shower baths. Stop the time wasted in trying to get water at the right temperature. Install Powers Mixers. Write for 20-page book.
THE POWERS REGULATOR CO.
2716 Greenview Ave., Chicago
Offices in 37 Cities
with The
POWERS
SHOWER MIXER

public, advocating periodical changes in window display. The group has adopted uniform stickers and tags for use in the sale of goods sold to the public. These are printed in black on a gold background with the words "A sign of quality goods—This label your guarantee—Member Plumbing Contractors' Association of Chicago."

The merchandising plumbers have also displayed on their windows and trucks an attractive sign in colors advertising the fact that they sell goods at retail. They have recently appointed an advertising committee which will study and recommend to its members the best method of encouraging the sale of plumbing goods by plumbers. These committees are as follows: Advertising, G. J. Feldkamp, C. J. Erickson, and R. A. Ferguson. Merchandising committee, W. Merryman, C. J. Stanley and Michael Mele.

The group holds regular meetings on the second and fourth Tuesday of each month at the headquarters of the association, 1941 Midland building, 176 West Adams street, Chicago.

◆

Stephen H. Welch Called by Death

Stephen H. Welch, president of the New York State Master Plumbers' Association during 1926-1927, and for many years treasurer of the Bronx association, died at his home, 2090 Arthur avenue, Bronx, New York City, December 24, after an illness of eight weeks. Past State President Welch, who was in his 55th year, began his career as a master plumber in 1902 when he organized the business of Welch & McMannus, but three years later the partnership was dissolved. In 1905 he established a business in the Bronx, where he was born and has lived all his life. Several years ago Past President Welch was a prime mover in the Three Day Institute which was held at New York University.

Stephen H. Welch

Being one of the most beloved master plumbers in his state, many of the men with whom he associated paid their respects at his bier in his home and on the day following Christmas when from St. Joseph's Church, where high requiem mass was said, his remains were laid to rest in the Gate of Heaven Cemetery. He is survived by his widow, six sons and a daughter. He was a member of the Old Times Association of the Bronx and his chief diversion from business was his farm up in New York state and the trout fishing it offers.

◆

Northern California Heating Contractors' Associations Merge

The Heating and Piping Contractors Northern California Association is the name of the association which has been formed by the merging of the Heating and Piping Contractors San Francisco Association and the Alameda county association. This is the result of numerous conferences having as their object a more unified organization.

Eventually the new organization will include mem-

bers doing business within a radius of 50 miles of the San Francisco metropolitan area. Headquarters formerly maintained in the Builders Exchange, in Oakland, by the Alameda county association; and in the Chronicle building, by the San Francisco unit, have been discontinued. The new headquarters are now situated in the Rialto building, San Francisco.

Officers of the newly formed association are: A. G. Atwood, president; George Schuster, vice president; James H. Pinkerton, treasurer; Frank Edwards, secretary. They assumed office the first of the year.

◆

Rock Island Masters Elect Officers

The Master Plumbers' Association of Rock Island, Ill., recently held its annual election of officers at which Henry F. Lamp was re-elected president; R. C. Lamp was elected vice president; F. T. Dufva, treasurer, and Kirk A. Journy was reappointed executive secretary for the fourth time. The installation of officers was held on January 2, at the Rock Island Elks Club.

◆

Passaic Association Elects Officers

The Master Plumbers' Association of Passaic, N. J., held its annual election of officers at a meeting on December 18. Allan J. Blair was elected president; Harry Vogel, vice president; I. Taylor, secretary; Stephen Dinino, treasurer; A. Levenson, financial secretary; Frank Scangarello, sergeant-at-arms; Roy Schleich and Harry Pruszansky, trustees. Two new candidates, Louis Lipani and S. Schneider, were admitted to membership.

Past President of New Jersey Association Injured in Car Accident

Walter Grub, past president of the New Jersey State Association of Master Plumbers and the Newark local association, with his brother William, who is associated with him in business at Newark, N. J., met with a serious automobile accident on December 21, when their car, in which they were going to a job, was struck by another machine. The injuries sustained by William Grub were minor in comparison to those suffered by his brother. Past State President Grub, besides a broken collar bone, received internal injuries from which he is slowly recovering at the Beth El Hospital, Newark, where the brothers were taken following the accident.

◆

San Francisco Plumbing and Heating Club Plays December Tournament

The Plumbing and Heating club of San Francisco, Calif., turned out enthusiastically for its fiftieth monthly golf tournament on December 21, with close to 50 of the far-western representatives of the plumbing and heating industry gathered at the beautiful course of the Lake Merced Golf and Country club, lying just south of San Francisco.

This course is one of the finest in the west and enjoys a high professional standing. Although generously trapped, there are no really mean spots from the first to the eighteenth.

Getting away to an unusually early start, the last foursome was on its way by 1:20 p.m. under clear skies and

• SEMLER SURE-FIT •

DRAINAGE FITTINGS

Semler SURE-FIT Drainage Fittings are designed to give good appearance. But this feature alone is merely a superficial reason for buying them. Behind their sturdy, attractive design is a specialized organization that knows how to produce fittings and that knows the most exacting needs of the trade and accordingly can guarantee the kind of fittings you would want to recommend.

SURE-FIT FITTINGS SEMLER STEAM FLANGED SPRINKLER DRAINAGE

SEMLER COMPANY
JEANNETTE-PA.
SURE FIT FITTINGS

MADDOCK'S

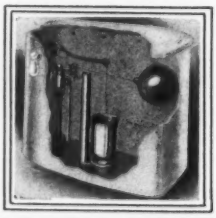
3 high quality toilets means
3 opportunities for profit in
3 different price classes

The Madera at $85, the Madbrook at $50, and the Maderno at $35. Thos. Maddock's Sons Pottery, Division of Standard Sanitary Manufacturing Company, Trenton, N. J.

CURTIN

TANK *NOISELESS* FITTINGS

A·F·CURTIN VALVE CO.



Medford, Mass.

Why Milwaukee's prices are lower—

"Junior Lines" have appeared. This is the last resort by some manufacturers to meet the demand of the dealer who is dominated by "close buyers." Milwaukee Flush Valve Co. are enabled to offer acceptable low prices without the aid of an inferior "Junior Line," because they have simplified their products, eliminated obsolete machinery and adopted modern production methods.

JUDELL

MILWAUKEE FLUSH VALVE CO.
Dept. D. 111 Milwaukee, Wisconsin, U. S. A.

The Housing Is Unbreakable

The Ridge Tool Co.
Dept. D., Elyria, Ohio

RIDGID WRENCHES

PIPE WRENCHES VISES AND PIPE CUTTERS

Sizes 6" to 60" Rubber Grip if desired

with quiet, balmy air, with nothing to handicap them except a few figures in the golf committee's official blue book. W. A. Rowe, Eric Roberts and R. P. Olsen did some good work with their drivers, while C. C. Anderson, J. J. McLeod, H. Brown and Frank J. Klimm earned a place in the hall of fame with their putters.

The list of class winners read as follows: Class A, C. C. Anderson; Class B, Robert Allmon; Class C, A. G. Atwood; Class D, R. P. Olsen.

An elaborate Christmas dinner was served at 6:30 p.m. Gathered around the long center table were 50 members of the club, with a score of others accommodated at smaller tables. The dinner hour was enlivened by songs and instrumental numbers by a San Francisco vaudeville team. A number of informal after-dinner talks were given; notable among which was that of President J. V. Young who reviewed sketchily the accomplishments of the Plumbing and Heating club since its organization somewhat more than four years ago. "If we continue to stick together—all three branches of our industry in this section—in the next four years as we have in the past, we can make still further gains," said Mr. Young.

Among the non-golfing members who appeared for the banquet were William J. Monihan, president of the San Francisco Master Plumbers Association, and V. A. Edgeworth of Oakland, secretary-manager of the Alameda county association, who was accompanied by W. Herbert Graham of the same city, and George Stoddard and Arthur Johnson from Berkeley.

The golf scores, in part, were as follows:

Name—	G.	H.	N.	Name—	G.	H.	N.
Young	98	14	84	Wilson	101	18	83
Noble	90	8	82	Olsen	120	40	80
Camp	105	20	85	Alt	117	29	88
Rainwater	126	27	99	Penhallegon	117	21	96
Fleming	118	35	83	Henderson	108	21	87
Leary	93	17	76	Rowe	95	19	76
Allmon	100	21	79	McLeod	145	40	105
Emanuels	126	39	87	Chittenden	129	36	93
Hoopes	89	18	71	Anderson	114	33	81
Forsythe	102	18	84	Dalziel	111	27	84
Atwood	108	22	86	McCarthy	105	22	83
Turner, D.	121	24	97	Brown	108	..	..
Finch	100	20	80	Roberts	125	..	..
Lees	98	19	79	Klimm	106	17	89
Marshall	117	..	..	Higgins	129	29	100
Kraus	121	25	96	Greenberg, M.	109	22	87
O'Hair	98	16	82	Greenberg, S.	114	23	91
Doerr	119	..	..	Hilp	85	..	..
Hawkes	89	..	..				

New plumbing shop of Cameron-King, Inc., Detroit, Mich.

a $3.00 job or a $100.00 job

WHICH ?

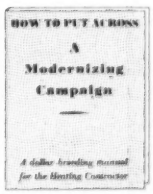
The radiator fails to heat. Not hard to locate the trouble. That's plain enough. The valve is worn out. It no longer vents properly. But what then?

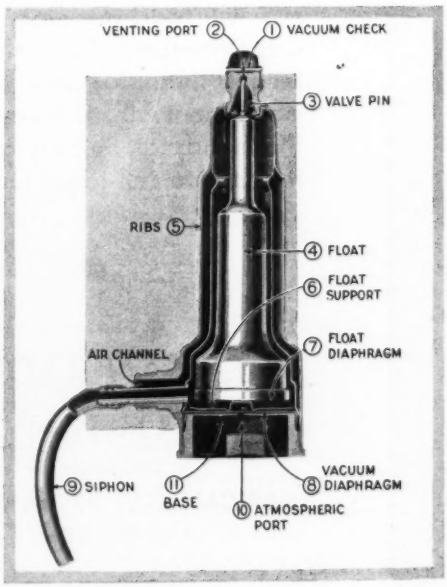
Shall the contractor simply replace the old valve with another cheap valve and do a $3.00 repair job—or shall he sell the owner a modern vacuum system with No. 2 Hoffman Valves, and land a $100 modernizing job?

Hundreds of contractors have discovered that it is no harder—and far more profitable—to sell real modernizing work—rather than small, bothersome repair jobs.

To them, every repair job on a one-pipe steam system is an opportunity—a means of landing a profitable contract on a No. 2 Hoffman Vacuum Valve installation.

But many contractors are not content to wait for trouble jobs. They are constanly promoting modernizing work in other ways. If you would like to know about the methods they are using, send for our free booklet "How to Put Across a Modernizing Campaign." It is full of live, up-to-date ideas they use.





With four simple changes you can quickly convert an ordinary one-pipe steam plant into a modern efficient vacuum system. (1)—Install Hoffman No. 2 Valves on every radiator. (2)—Vent the mains with Hoffman No. 16 Valves. (3)—Tighten up the system to make it air tight. (4)—Install a Hoffman Kompo Gage on the boiler.

These simple changes enable you to offer the home owner a vacuum system in which radiators will heat up in 15 minutes instead of an hour—will remain hot for three hours instead of one hour after fires are banked—and will reduce fuel costs about $5.00 per radiator per year (except in mild climates).

Hoffman No. 2 Valves are the original vacuum valves and are the only vacuum valves having a double lock to keep the air out. Because of this feature—patented—they pull and hold maximum vacuum under all conditions.

Hoffman Specialty Co., Inc.
Dept. X-29, Waterbury, Conn.

Without charge or obligation, please send me your free booklet on "How to Put Across a Modernizing Campaign."

Name .....

Street .....

City ..... State .....

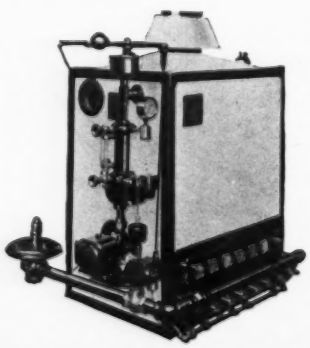
By .....

announcing

the greatest advertising campaign ever run for IDEAL GAS BOILERS

look for the double-page ads in these February magazines

Literary Digest
Better Homes & Gardens
Time
American Home
Country Life
House & Garden
Sportsman



recognizing the tremendous demand for automatic heating the American Radiator Company has decided to tell the story of Ideal Gas Boilers to millions of readers of the national magazines throughout 1930... for example, in February over 12,000,000 people will read this story . . . these advertisements from the world's largest manufacturer of heating equipment will, of course, interest thousands of owners and make it easier to sell Ideal Gas Boilers.

AMERICAN RADIATOR COMPANY

distributed by

AMERICAN GAS PRODUCTS CORP.
Chrysler Bldg., N. Y.

Wisconsin Apprenticeship Conference Completed

The fourth annual Wisconsin apprenticeship conference of the plumbing trade, including master plumbers, organized journeymen, state officials, vocational school directors and instructors, is scheduled to take place at the New Pfister hotel, Milwaukee, on January 13, 1930. E. E. Gunn, Jr., assistant state director of vocational education, is chairman of the convention and has announced his program to include a series of educational talks by men prominent in the industry.

Mr. Gunn will open the series of talks on Monday morning, January 13. He will be followed on the program by Frank R. King, R. L. Welch, H. C. Weber, Peter T. Schoemann, L. R. Friend, president of the Wisconsin association, and W. Simon. The morning session will be closed by Peter King, executive secretary of the Milwaukee Master Plumbers' Association.

Convention sessions will be resumed at 1:30 p. m., when ten-minute reports from plumbing instructors will be given. The plumbing instructors who will talk include: F. O. Maeder, A. J. Matthais, H. Pommerenck, M. Hanson, H. Miller, G. Farndale and E. Cleland. Opportunity for discussion and questions will be afforded at the close of each instructor's report.

◆

Bernard J. McGovern Called by Death

Bernard J. McGovern, master plumber of Hoboken, N. J., died on December 17 in his 62nd year. Mr. McGovern was prominently active in club affairs, holding memberships in both the Elks and Knights of Columbus. Funeral services were held on December 19 at New Brunswick, N. J. He is survived by his wife.

◆

Philadelphia Supply Association Adopts Credit Plan

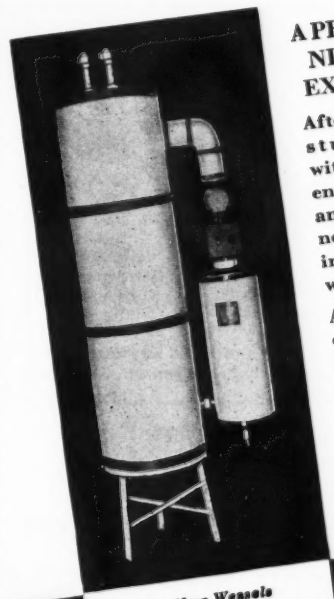
The Plumbing Supply Association of Philadelphia, Pa., is sending out the following message to the plumbing and heating trade in the Philadelphia territory, relative to the adoption of the credit extension plan:

Introduction

"The matter of extending credit is a most important part of modern business. The extension of credit by plumbing supply wholesalers to plumbing contractors, steam fitters and others is, in these days of keen competition, exceedingly hazardous.

"The result has been that plumbing and heating contractors and wholesalers have sustained tremendous credit losses. Credit managers have of necessity had to depend largely upon their own previous experience with their customers and upon such additional credit information as could be obtained from the experience of others.

"Many engaged in the plumbing and heating contracting business have unwittingly been drawn into shrewd or unfavorable contracts with parties for whom they do work. The result has been that the contractors have sustained heavy losses and become unable to meet their financial obligations, with resultant losses to the material supply houses. This condition is unfair to those who meet their obligations promptly, as well as to the public



A PRODUCT OF NINE YEARS EXPERIENCE.

After an exhaustive study, coupled with our experience in production and operation, we now offer our new improved electric water heater.

Almost 100% efficient and practically foolproof we offer it for sale through the plumbing trade.

Any plumber can sell it with absolute confidence.

The New Wessels Electric Water Heater

D. D. WESSELS & SONS CO.
DETROIT, MICH.

Electric Wessels QUALITY WATER HEATER

Not a Scratch in a Carload

(With apologies to "Old Gold")

LOOK THESE NEW IMPROVED TRIPLE WEAR WARNOCKS OVER

Try one out on your next chrome or nickel job

Ask your jobber to supply you

Warnock Manufacturing Co.
WORCESTER MASS.

Yeomans
DEPENDABLE
Electric
Pneumatic
Steam
Gasoline
PUMPS
Sewage
Bilge
Flood
Drainage
Condensation
Booster
YEOMANS BROS. YEOMAN SERVICE
Established 1898
Representatives in Principal Cities
Yeomans Brothers Co.
1453 Dayton St., Chicago

WARE
XXX XXXXXXXX XXXXX
PIPE NIPPLES
A complete assortment of Ware Pipe Nipples in your shop will speed up work. They are made of new pipe, accurately threaded and cut to perfect sizes.
WARE COUPLING & NIPPLE CO.
XXXXXXXXXXXXXXXXX WARE :: MASS. XX

THERE is one only explanation for the constantly-increasing popularity of Speakman fixtures. It is that they are better fixtures.
SPEAKMAN COMPANY, *Wilmington, Del.*
SPEAKMAN
SHOWERS *and* FIXTURES

Excellence
There is a best in everything and everything that is best in refrigeration is available in Trupar.
TRUPAR
ELECTRIC REFRIGERATION
Investigation will convince you that the above is no idle claim. Investigation will also show how you can turn Trupar into a profit maker as so many others in the trade are doing. Write.
Trupar Manufacturing Co.
140 Davis Ave.,
Dayton, Ohio

who, in the long run, pay for credit losses through increased prices.

Objects of the Plan

"The objects of this plan, therefore, are to improve conditions for the benefit of plumbing and heating contractors, supply houses and the general public.

"It is realized the plan must be absolutely fair in every particular in order to prevent the slightest injustice or harm being done to anyone. The plan provides every conceivable method to prevent reporting customers other than those who have failed to pay their bills. Every method for the immediate release of every customer from the list upon payment of his bills is provided.

"The plan in all its aspects has been designed to be fair, in every way, and affords every opportunity for anyone whose account is in arrears to explain his situation.

"The essential features of the plan are: First, it provides for the issuance of an arrears list of accounts three months old and over. Second, accounts on this list will not be extended credit but sold on a cash basis.

"In the operation of the plan every effort will be made to have it conducted upon a basis which will be fair to everyone and no arbitrary action will be taken.

"Beginning on February 1, the plan, as outlined above, will be put into effect by members of the Plumbing Supply Association of Philadelphia. The credit managers of the various houses will welcome the opportunity of co-operating in every possible way with their customers."

◆

Seattle Heating Contractors Adopt Certification

The Heating & Piping Contractors Seattle Association, Seattle, Wash., has voted for certification of all work, effective January 1, 1930. E. G. Byrd, of New York City, organizer for the Heating & Piping Contractors National Association, was the prime mover in promoting certification in Seattle, and the matter has been under consideration by the trade in that city for practically two years.

◆

New Bedford Masters Hold Christmas Party

The New Bedford Master Plumbers' Association held its annual Christmas party, Thursday, December 19, at the association headquarters, New Bedford, Mass. About 85 members and guests were present,

B. Lees, J. V. Young and Jack Camp, at the outing of the San Francisco Plumbing and Heating Club, at Boyes Springs

all arriving early in order not to miss a single course of the turkey dinner.

Immediately following the dinner, President Fred Robinson made a brief address of welcome and introduced Mrs. Charles D. Kieser of Newton, president of the Massachusetts state Ladies' Auxiliary. Mrs. Kieser expressed her appreciation of the New Bedford association's invitation to attend the party, and suggested that all ladies present, who were not members of the auxiliary, would do well to join at once and assist the state association in its efforts to make the coming national convention, to be held in Boston, a complete success. Following Mrs. Kieser's talk, the gathering spent the remainder of the evening playing whist. These social hours were enjoyed by all present.

The entertainment committee, headed by President Robinson, Secretary Walter P. Bailey, Harry Mulberry and Mark E. Greenleaf were given a vote of thanks for their efforts in making the affair a great success.

Among the guests present were Mr. and Mrs. Charles D. Kieser of Newton; Mr. and Mrs. J. Preston Perham, West Roxbury, and Mr. and Mrs. Wallace T. Wordell of Taunton.

◆

S. H. Newman Succumbs to Heart Attack

S. H. Newman, president of the Plumbers' Woodwork Co., Algoma, Wis., died in that city December 5 following a heart attack. Mr. Newman has been interested in the Plumbers' Woodwork Co. during the past thirty years, and obtained entire control of the business some time ago. He is survived by his wife and one daughter.

◆

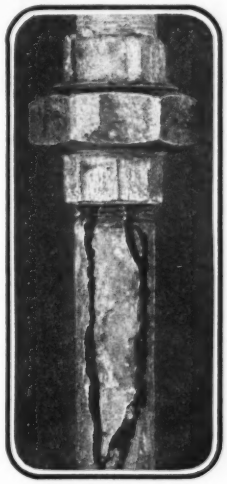
Hold Zone Apprenticeship Conferences

Apprenticeship zone conferences have been held in Milwaukee and Manitowoc, Wis., during the month of December, at which time effort was made to clear up uncertain impressions about the 400 hours of schooling required of apprentices. It was pointed out that the 400 hours of schooling is required not only for young indentured apprentices, but to men over the indentured age as well. The meeting held in Milwaukee took place at the office of the Wisconsin Industrial Commission, with representatives of the local and state master plumbers associations, plumbing instructors and journeyman plumbers, present.

About fifty persons attended the meeting at Manitowoc, including Peter J. King, executive secretary of the Milwaukee Master Plumbers' Association and Lewis R. Friend, president of the Wisconsin Master Plumbers' Association, who appeared on the program of speakers. Other speakers at the Manitowoc meeting included E. E. Gunn and Walter Simon, both of the industrial commission; Robert E. Hasselkus, representing the board of health; A. L. Nimtz, secretary and director of the vocational school of Manitowoc; A. L. Conroy and S. O. Maeder.

The zone meetings are held preparatory to the state apprenticeship conference which will be held at the Hotel Pfister, January 13, 1930.

This would not have happened if the threads had been filled with



SMOOTH-ON NO. 3

THE illustration shows only a small line and a thread leak of the commonest kind, but—as is often the case, it was neglected. In this particular instance, the drip went into and saturated the insulation of a steam boiler and started corrosion of the plate surface, so the new pipe section and fitting and the labor required in renewing a portion of the line were but a small part of the cost of the leak.

Thousands of small ultimately expensive leaks like this have to be repaired every day, just because the threaded joints were laid up with the first thing that was handy. Where this is done with galvanized pipe, you risk losing most of the value of the galvanizing, for the threading leaves the weakest metal exposed, and the ravages of rust quickly destroy the joints where leakage once starts.

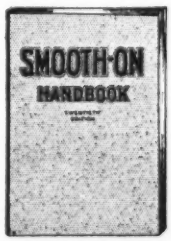
Use Smooth-On No. 3 as standard practice in making up all threaded joints and you will have fewer interruptions and an astonishing absence of thread joint leaks.

Smooth-On No. 3 is primarily a thread joint filler, made to hold anything from superheated steam to thin oil under high pressure, but to permit the joints to be taken apart in case of necessity. It lubricates the threads to make assembling easy and puts into the voids between them a metallic filler that cannot crack, shrivel, shrink, dry or blow out, and is not impaired by expansion.

Smooth-On No. 3 is peculiarly effective in making up the deficiency of unequal pitch or taper, slight under-cutting, surface corrosion, pits or battered spots, and under these conditions will very often produce a thorough seal where tightness could not be produced in any other way.

Make some trial installations where leakage has been obstinate and you will see the difference and will be glad to have *all* your threaded joints made this way.

Get Smooth-On No. 3 in 1 or 5 lb. can or larger keg from your supply house or if necessary from us direct.



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if you return the coupon

Twenty-first Edition—136 pages of data—193 diagrams, pictures and practical hints on at least 200 different uses for SMOOTH-ON. Every progressive engineer should have this book—get your copy NOW.

***Do it with* SMOOTH-ON**

SMOOTH-ON MFG. CO., Dept. 12
570 COMMUNIPAW AVE., JERSEY CITY, N. J.

Please send copy of the SMOOTH-ON Hand-book, 21st Edition

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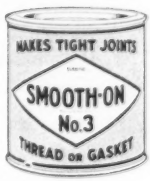

QUESTIONS

ASKED BY READERS AND ANSWERED BY EXPERTS

Concerning Questions Asked in Plumbing Inspector's Examination

In a recent examination for plumbing inspector, the following questions are some of the outstanding ones asked:

1. How would you figure the capacity of a septic tank for a family of eight persons?
2. How many water closets would you install in a school housing 100 boys and 100 girls?
3. When is a by-pass detrimental to a plumbing system?

How would you answer these questions?

P. J.

The starting point in the design of a septic tank is the number of gallons that must be handled in the space of twenty-four hours. It takes about twenty-four hours to reduce raw sewage, and this accounts for the period of time mentioned.

The per capita amount of sewage to be handled per day is by no means a standard amount. The amount

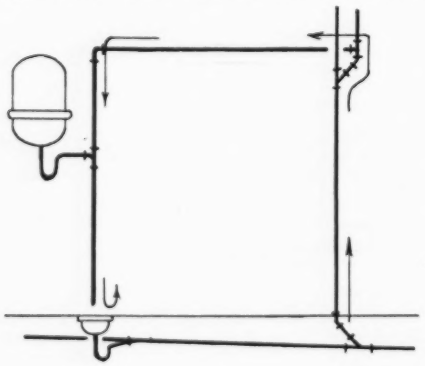

Fig. 1

generally estimated is 30 to 50 gallons, with the average at 35 or 40 gallons.

Another starting point is the depth of the tank. This should not be less than 4 ft., with 5 ft. most generally in use.

In order to give the sewage the proper rate of flow, experience shows that a rectangular shape with length about twice the width is most satisfactory.

On these several basic principles the following table of dimensions for septic tanks is based, and these sizes will be found satisfactory.

No. Persons to be Served	Inside Dimensions of Tank		
	Width	Length	Depth
2 to 5	2 ft.	4 ft.	5 ft.
6 to 9	2½ ft.	5 ft.	5 ft.
10 to 13	3 ft.	5 ft.	5 ft.
14 to 17	3 ft.	5½ ft.	5 ft.
18 to 21	3 ft.	6 ft.	5 ft.

The minimum effective capacity of a septic tank for five people should not be less than about 250 gallons, with an additional 35 or 40 or more gallons for each additional person.

Number of Water Closets for Mixed School

Correspondent's second question concerns the number of water closets required for a mixed school.

There is no standard practice on this subject. Important as it is, very few plumbing codes cover the point, and in general it is a matter that would be referred to the plumbing inspector for a decision.

Ohio, Wisconsin and Colorado state laws cover this subject definitely, and we give the practice of these three states as follows, including urinal requirements also:—

For schools the Ohio requirements are:

For Male Pupils			For Female Pupils	
No. of Pupils	Water Closets	Urinals	No. of Pupils	Water Closets
50	2	3	50	4
100	4	5	100	7
200	7	9	200	12
300	9	13	300	16
400	11	15	400	19
500	12	17	500	21
1000	19	27	1000	34
2000	32	48	2000	59

School buildings in Wisconsin shall have the following sanitary equipment:

"One water-closet for every 20 females or fraction, except for grammar and primary grades, where there

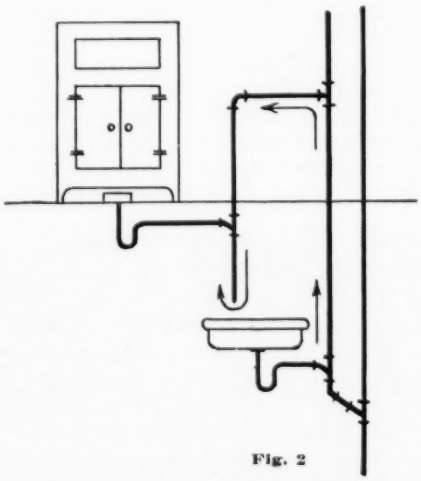

Fig. 2

shall be one water closet for every 15 females or fraction.

"One water closet and one urinal for every 40 males or fraction, except for grammar and primary grades,

where there shall be one water closet and one urinal for every 30 males or fraction."

The Colorado law is as follows:

"In school buildings there shall be provided the following fixtures:

"One water closet for each 15 females or less.

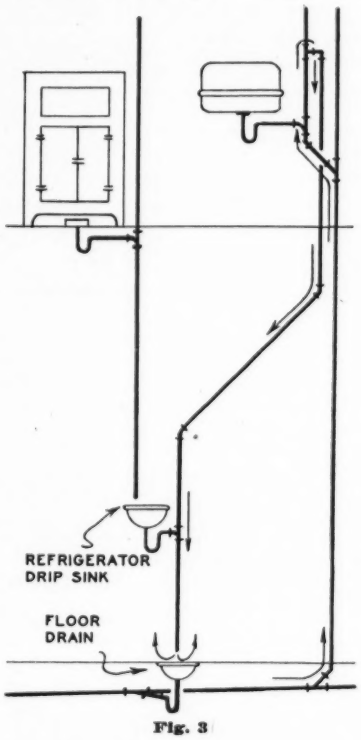

Fig. 3

"One water closet for each 25 males or less.

"One urinal for each 15 males or less."

If we use Wisconsin's figures for grammar and primary grades, each of the three states would call for 7 water closets for the girls and 4 for the boys, a total of 11.

We would suppose the examiners would expect an

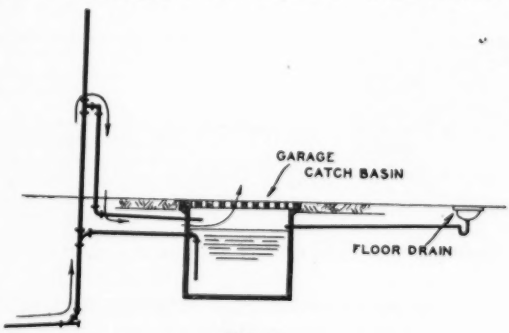

Fig. 4

answer based on their state law on the subject. In this case the state law is very meagre, and we do not find the subject covered in the plumbing rules formulated by the state examiners of plumbing.

The Question of By-Passing

In the third question it is asked when a by-pass is detrimental to a plumbing system. Our own definition

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78 years of Service to Industry

As the passing of 1929 marks another milestone in the long history of the Jarecki organization; as "77 years of service" becomes "78 years of service"—may we not take this occasion to express our wishes for 78 years of progress and prosperity for you?

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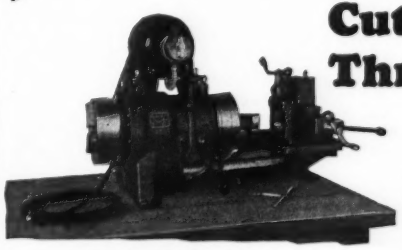

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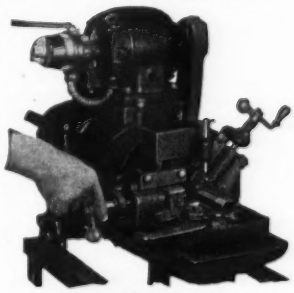

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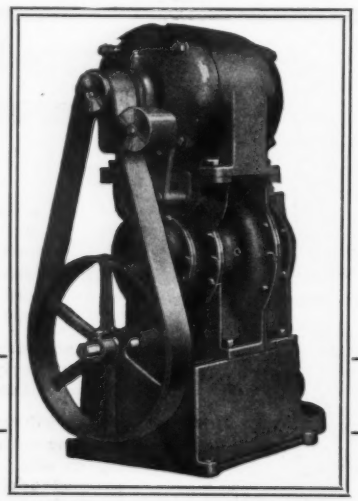

Pat. 9-4-23

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of a by-pass is: "A connection which permits air from the sewer or from the drainage system to evade the seal of a trap, by passing around it and escaping into the house." According to this definition, our answer to the examiners would be that a by-pass is always detrimental to a plumbing system.

These by-passes are particularly liable to occur on indirect drainage connections.

Whenever the trap on an indirect-connected fixture is vented, one of these by-passes is formed. The question will at once be asked: "Why vent an indirect connection?" This vent is absolutely unnecessary, and moreover forms a by-pass, but nevertheless such a connection is not uncommon.

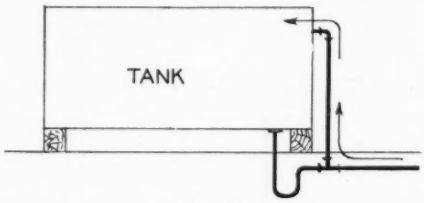

Fig. 5

We show by-passes in Figs. 1 and 2. The passage of sewer air is shown by the arrows.

Fig. 3 shows a by-pass that we have seen on the pilot drawing for an important city.

Fig. 4 shows a by-pass that results from the requirements for connecting a garage catch basin, as called for in the plumbing code of one of the very largest cities in the country.

In the case of Fig. 4, the intention is to carry a vent pipe up through the garage roof, to protect the catch basin against siphonage. If it were not for forming the by-pass, the connection of the ventilating pipe into this vent pipe would be a good thing. It certainly locally vents the catch basin, but in doing so it admits sewer air.

There are other ways also in which by-passes may be formed.

If an overflow is ever connected onto the sewer side of a trap, instead of the house side, a by-pass will be formed. This situation, which may easily result from ignorance or carelessness on the part of the workman, is illustrated in Fig. 5.

Oil Fuel Boilers in Large Building

(Continued from Page 89)

on the pump side of the relief valve and run to the preheater inlet. From the preheater outlet the feed line runs directly to the burners. Thermometers are suitably installed to indicate temperatures of oil coming from tanks and upon exit from preheater.

Each boiler is equipped with a 200 H.P. rotary burner. No-voltage release switches and starting and stopping push buttons form the electrical controls. The burners are so mounted that the entire assembly can be swung aside for convenience in inspection and cleaning. Admission of secondary air is through checker-fire brick flooring of the fire box so arranged that air can be properly distributed over the flame area.

"Increase Business—But Not Accounts Payable"

By WALTER KLIE

To The Editor:

"Any occasion which causes us to pause in our daily pursuit of business and remove our nose from the grindstone long enough to take a calm, intelligent look at ourselves and our business, giving thought both to the past and to the future, is well worth while.

"Such a use of the New Year season is of much greater value to us than the making of 'whoopee' to dull temporarily our disappointments or artificially stimulate our optimism.

"In reviewing the past year from a nation-wide survey, we find the volume of heating business, like all building and construction business, somewhat subnormal.

"This furnishes a complete reason to the unthinking, for lack of profits or even losses, and a false confidence that, as soon as business picks up somewhat, profits will automatically be made.

"At President Hoover's conference held in Washington, December 5, the major emphasis was placed upon finding ways and means to continue employment as fully as possible and without wage reductions.

"A program of increased construction, new and for maintenance, rehabilitation and rejuvenation of plants, buildings and homes, was not only encouraged, but those units, like U. S. Steel, railroads, electric power, and other utilities who budget and allocate definite amounts of money for certain purposes for the coming year, definitely committed themselves to increased expenditures for these purposes for 1930.

"The banking interests predicted more money available for building purposes.

"Consequently, with no overbuilt 1929 to catch up to, with big business committed to an enlarged construction program to assist employment and make more efficient plants, with more money available and ample man power ready, we may expect somewhat increased business.

"Let us, as contractors, have our house in order to receive it, handle it properly and efficiently and soundly.

"The country and our business will not be really helped, if this increase only results in growing accounts payable.

"Our Heating and Piping Contractors National Association, in line with a general recommendation made by Assistant Secretary of Commerce, Dr. Julius Klein, at the conference, when he stressed the importance of fact finding in these times, has launched an educational department under S. Lewis Land.

"We have our trade promotion committee giving national attention to merchandising and credit policies and other subjects of basic value to our industry.

"Our certified heating committee, committee on standards, welding committee, survey committee, etc., are compiling information for better construction and elimination of waste.

"Thinking heating and piping contractors throughout

"That Pump *Must Not* Clog—So I've Specified Economy"

21 Years of Success as Specialists in Centrifugal Pumps

"WE CAN'T depend upon strainers to stop the drainage of this job. The pumps will have to handle what comes to them."

A frequent problem—and a vital one.

For not only heat, light and water supply may depend on the proper functioning of the building's sewage disposal plant—but health as well.

Specifying an Economy Non-Clogging Pump, the architect relieves his mind on this score. Economy Pumps embody the latest advances in this new field. Comparisons in actual practice have proved their superior and surprising ability to handle liquids containing a large percentage of solids—whether pulp, sticks, rags, stringy materials or coarse refuse of any kind.

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☐ No. 408—Double Suction Single Stage Pumps
☐ No. 409—Return Line Vacuum Pumps
☐ No. 414—Multi-stage Horizontal Split Case
☐ No. 415—Single Suction Single Stage
☐ No. 416—Small Multi-stage Vertically Split Centrifugal Pumps
☐ No. 417—Caisson Pumps

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Company.....
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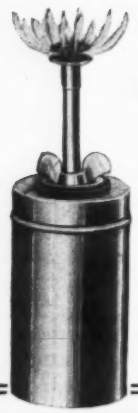

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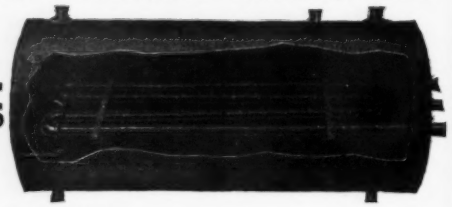

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the country will not only support such worth-while activities by active membership in the national, but by intelligent co-operation through local associations, will do their bit toward saving this business for the responsible contractor through creditable, efficient performance and through co-operating with other elements of the building industry toward building up a sound credit structure, to replace our present tottering one."

◆

Wisconsin Vocational Board to Hold Conference

The Wisconsin State Board of Vocational Education will hold a state-wide conference for the promotion of educational opportunities in the plumbing and heating industry of Wisconsin at the New Pfister hotel, Milwaukee, on January 13, 1930. The conference will be attended by vocational school directors, coordinators, plumbing instructors and members of local and state apprenticeship committees. E. E. Gunn, Jr., assistant state director of vocational education, is chairman of the conference, and is assisted by Frank R. King and Walter Simon. The complete program is as follows:

Monday, January 13, 1930

9:30 a. m.—Growth of the Itinerant Plan for Plumbing Instruction, E. E. Gunn, Jr.

9:45 a. m.—Administration of Registration and School Attendance Requirements in Relation to License Requirements, F. R. King.

10:05 a. m.—Present Status of Text Material Development, R. L. Welch.

10:25 a. m.—Local Apprenticeship Committee Plans, H. C. Weber; discussion by Peter T. Schoemann, L. R. Friend, W. Simon.

11:40 a. m.—Plumbing Apprenticeship and Its Relation to the Plumbing Business, P. King.

In the above schedule each speaker has been allotted approximately 20 minutes, 15 minutes of this period will be used by each speaker in presenting his topic or participating in the discussion of the topic assigned. The remaining 5 minutes in each case will be used for general questions and discussion from the floor.

1:30 p. m.—Ten Minute Reports form each of the following plumbing instructors: F. O. Maeder, A. J. Matthais, H. Pommerenck, M. Hanson, H. Miller, G. Farndale, E. Cleland.

Opportunity for discussion and questions will be afforded at the close of each instructor's report.

3:00 p. m.—Round Table Discussion.

It is desired that as many as possible be present at the conference and be prepared with questions or remarks which will furnish the basis for profitable discussion of problems and procedure closely related to this field.

◆

Association Elects Officers

The Macoupin and Montgomery County Master Plumbers' Association of Mt. Olive, Ill., at its last regular monthly meeting, held in Litchfield, Ill., elected its officers for the ensuing year.

G. E. McDaniels of Litchfield, was made president; J. T. Smith, Gillespie, vice president; C. Lang, Mt. Olive, secretary; and C. J. Schloman, also of Mt. Olive, treasurer.

◆

Decatur Association Elects Officers for 1930

The Plumbing and Heating Bureau of Decatur, Ill., at its annual election held December 27, 1929, re-elected the following officers: J. O. Heinz, president; T. A. Brinkoetter, vice president; and O. W. Dawson, treasurer. C. E. Thorkelson is executive secretary.

The members of the executive board for the ensuing year are: Cody R. Holmes, T. E. Downing, Carter Earnshaw, P. Smith and F. W. Schlie.

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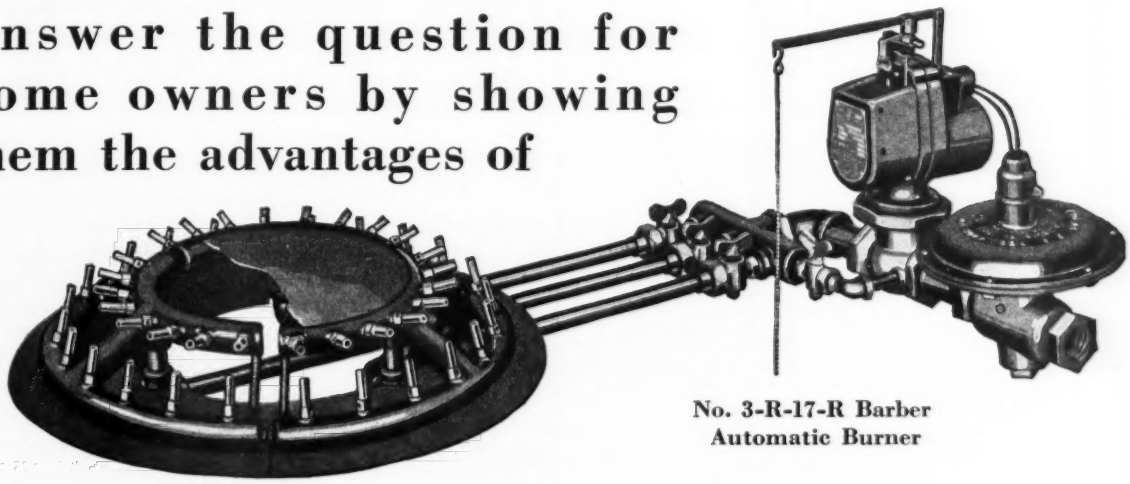
Answer the question for home owners by showing them the advantages of



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Show your prospect how a BARBER Conversion makes it easy to change to gas and back again to coal if gas fails to meet his expectations. Of course, he never will return to coal. For Barber *Automatic* Jet Gas Burners convert any good coal-burning boiler or furnace into an efficient gas heater.

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Many thousands of successful conversions are in use with Barber *Automatic* Jet Gas Burners throughout the country. Impartial and authoritative tests show efficiencies ranging from 75 to 82 per cent.

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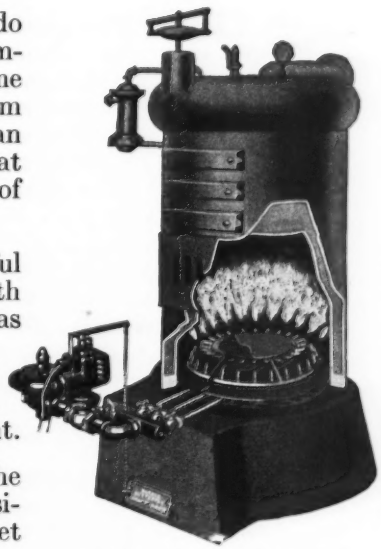

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Write today for the book, "The Ultimate Achievement in Simplified Home Heating," which contains complete descriptions of Barber *Automatic* Jet Gas Burners and details about using the Specification Data Sheet for correct conversions. Also ask for discounts and sales literature.

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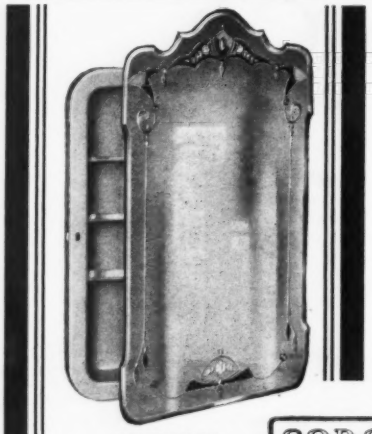

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Complete stocks are now being carried in Chicago, New York, Philadelphia and Boston; communicate with Corcoran offices at 1820 McCormick Bldg., Chicago; 1228 Locust St., Philadelphia; 11 West 42nd St., New York, and Beaudette & Graham Co., 915 Boylston Street, Boston.

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Gentlemen:
We are interested in Corcoran One-Piece Steel Bathroom Cabinets. Kindly send catalogue and full details.

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North Shore Contractors Gun Club Holds Shoot

The North Shore Plumbing Contractors Association's Gun Club recently held a turkey shoot at the traps at Oakton and McCormick boulevard, Evanston, Ill., with twenty-five members participating. The following members won turkeys for their good marksmanship: George W. Wible, George W. Wible, Jr., John M. Krejci, B. Lloyd, C. Ellis, A. J. Changelon, Jr. and A. J. Changelon. Another shoot will be held soon.

◆

Milwaukee Master Made Officer of Business Club

P. J. King, secretary of the Milwaukee Master Plumbers' Association, has been chosen sergeant-at-arms for the American Business club at Milwaukee, Wis., at the club's annual Christmas party. Mr. King declined to accept the nomination as president of the group, but members insisted that he hold some office in the club.

◆

Louisville Association Elects Officers

The Master Plumbers' Association of Louisville, Ky., recently held its annual election of officers, electing Robert Layer as president; Albert Hirsch, vice president; and O. H. Mitzlaff, secretary-treasurer.

The "Great American Illusion"

(Continued from Page 44)

still bothered by unreasonable conditions from general contractors would have in their hands an effective means of correction. Proper action on the part of our industry would have put our own men in a strong position. As far as we know, the rules set up by the committee were mentioned in the columns of DOMESTIC ENGINEERING.

We have indicated in a general way some of the conditions which need immediate attention. It is not, of course, within the province of an article such as this to propose a final solution. That is impossible—conditions will continue to change, new problems must be met.

There are indications that the industry is awakening to the necessity for action. The trade practice conference offers possibilities for great improvements in the wholesale division. Manufacturers are studying, under competent direction, ideas which should help solve some of the difficulties. The contractors have reacted favorably to the idea of a trade practice conference and are watching what is going on in the wholesale division with the greatest interest. The decision to have the Plumbing and Heating Industries' Bureau co-operate with the Plumbing and Heating Institute in policy-finding activities holds promise that some of the fundamentals overlooked in the past will be given due consideration.

Facing a year which promises a volume of business quite sufficient to yield profit-making possibilities for the industry, with indications that we are at last getting down to studying some of the problems, the solution of which must precede any really effective merchandising program, it may reasonably be hoped that the industry will enjoy as favorable a condition as it is humanly reasonable to expect. If we leave the "great American illusion" behind us, other problems should prove soluble.

This Week's MARKETS

Contractor Demand Is Light

BUSINESS in plumbing and heating was rather quiet in the large jobbing centers throughout the country during the past fortnight, as contractor demand was at a more or less slow pace and wholesalers, instead of ordering fresh material, were devoting most of their attention to stock counting and putting their businesses in shape for the new year. Salesmen for manufacturing interests report that buyers for wholesale houses are displaying only a moderate interest in their first quarter requirements, and in some lines this does not appear to be as pronounced as a year ago at this time. Factories are in possession of ample stocks and quick delivery service is available. On January 1 a number of manufacturers of enameled ware, pottery and brass goods announced the withdrawal of preferentials.

November shipments of vitreous china plumbing fixtures, including all vitreous chinaware which in regular practice is connected with a drainage system, as reported to the department of commerce by twenty-six manufacturers, were 197,995 pieces, as compared with 239,817 pieces in October and 230,732 in November, 1928.—November shipments of enameled sanitary ware, as reported to the department by twenty-two manufacturers comprising practically the entire industry, totaled 215,729 pieces, as compared with 283,495 pieces in October and 281,469 pieces in November, 1928.

MIDDLE ATLANTIC

Buying Tone Is Still Moderate—

Quantity buying was exceptional by its scarcity during the fortnightly period, and such a condition was the prevailing trend all during the past thirty days. Some few jobbers are still engaged in taking inventory, and coupled with the holiday season just passed, this has resulted in light buying on the part of wholesalers. This momentary relapse in activity has also given manufacturers an opportunity to readjust their affairs preparatory to the new year's business.

According to building reports for 1929 given by the Public Ledger of Philadelphia for Philadelphia only, the year fell short of 1928. Permits were issued for $104,000,000 of construction as compared to $111,804,680 for 1928. Dwellings were more responsible for the decrease than any other branch of building showing a decline of approximately 50 per cent as compared with the preceding year and being only about 33 1/3 per cent of the 1925 total, which was the greatest total the city ever enjoyed.

F. W. Dodge Corp. reports a total valuation of $4,101,700 in contracts awarded in the Middle Atlantic Section for the 51st week from December 14 to 20 and a total of $7,509,100 for the 52nd week to December 31.

Soil Pipe

Some representatives report an influx of a few orders for soil pipe at this time by those wholesalers that have completed their stock taking. The month of December produced very little in the way of tonnage, however, and many believe that the total fell below that of last year for the period. Master plumbers are not requiring any appreciable volume of pipe and this condition has been reflected to jobbers and producers all during the past month. No price changes have been noted, and shipments from sources of supply are prompt.

Pipe—Brass, Steel and Wrought Iron

Representatives of brass pipe producers report that they are receiving a fairly substantial amount of stock orders at the present time, but the month of December did not produce a very gratifying amount of business. Wrought iron pipe is being purchased in some instances by jobbers at this writing, since they have completed their inventories. Makers of this type of pipe also report that the last month of 1929 was low in the point of volume. Steel pipe has apparently paralleled the other two types in activity with a few commitments being made since the first of the year. Shipments are satisfactory in all cases. Prices are unchanged.

Fittings

Demand for brass malleable and cast iron screwed fittings was not heavy during the first few days of the new year. In a few instances, jobbers have anticipated their immediate requirements and placed orders, but on the whole, the volume was rather small. December was a slow month for fitting manufacturers, as in practically all other lines. No price changes have been announced and deliveries are made in a commendable fashion.

Enameled Ware

The movement of enameled ware during the past month was of a retarded nature. Master plumbers did not require these types of fixtures this year, in the same proportions as December, 1928, due largely to the decrease in the number of speculative dwellings erected in 1929. Most manufacturers have issued a new sheet on enameled ware announcing the discontinuance of all preferentials. Factory and warehouse shipments are made satisfactorily.

Pottery

Pottery orders have been received in sufficient quantities since the first of January to step up the activity some-

what at the plants, although, in most instances, potters are well stocked. The orders forwarded by jobbers are chiefly of a stock nature, wholesalers anticipating their immediate future needs. December did not reach the totals of other months of the year in volumes shipped, lagging considerably behind. Potters' shipments are prompt.

Plumbers' Brass Goods

Jobbers' interest in both cast and tubular brass goods is not at a high pitch at the present time. The month of December proved to be better than expected for some producers, as compared to the earlier fall months. Prices have not been altered and factories are shipping in an expedient manner.

Range Boilers

Interest in range boilers has not enlarged to any appreciable extent with the advent of the new year. Master plumbers have shown indifference insofar as range boilers are concerned. The price situation is still the bright spot in this market. Factories' shipments are prompt in all cases.

Boilers and Radiators

Manufacturers have evidently encountered the usual seasonal lull at this time, which was not in evidence last year when price changes occurred soon after the first of the year. Heating contractors were actively engaged in installation all through the Fall and early Winter, although December was not on a par with the preceding month. Producers are quickly taking care of all jobber commitments. Manufacturers' published prices to their distributors have not been changed since our last review was published and the market on boilers and radiators is reported firm.

CENTRAL WEST

Consumption of Materials Is Light—

Demand for materials from plumbing and heating contractors in this territory was light during the fortnight just passed. With the peak of the heating installation season in the background requirements of contractors for boilers, radiators and other heating equipment held at only an average seasonal pace. Requirements of contractors in the line of plumbing material, both finishing and roughing-in goods, are not ordinarily heavy at this period and, generally speaking, the past fortnight hardly equalled the same period of last year in point of volume.

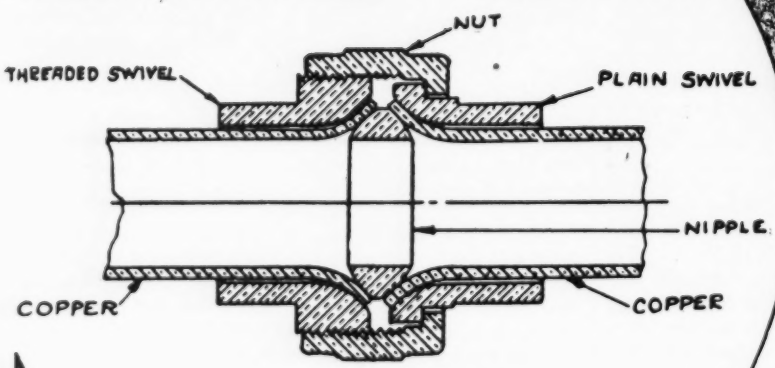
Almost all wholesalers in the district were busily occupied with inventory-taking during the period and, at the time of this writing, not a great number of reports had been received of jobbers ordering for future delivery. Nevertheless, this phase of business is better than when the review previous to this one was written. Contractors can ordinarily secure material from their resources about as needed and wholesalers report no difficulty in securing prompt replacements from manufacturing sources of supply.

Effective January 1, a number of manufacturers of brass goods, enameled ware and pottery announced the withdrawal of preferentials on these items.

Soil Pipe

Contractor demand for soil pipe continued to hold at a fairly low level during the past two weeks. While wholesalers' stocks as a general rule are light, manufacturers

ANDERSON



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Indian Orchard, Mass.

do not report a great deal of new business, especially in large-sized orders. Foundries are taking care of business in good time and no change has been announced in makers' quotations.

Pipe—Steel and Wrought Iron

With inventory-taking occupying their attention at the present time, the majority of wholesalers show little desire to order pipe in quantities other than needed to take care of current requirements. Distributors' pipe racks are not burdened with heavy quantities of either steel or wrought iron pipe and jobbers are able to secure quick replacements from mills. Contractor requirements in the line of pipe are light at the present time. Mills have not changed their prices.

Fittings

There was nothing new in the fittings market during the past two weeks. Contractor demand is only average for this season of the year and wholesalers' turnovers are consequently light. Manufacturers' salesmen state that jobbers, being in the midst of inventory, are not as yet placing a great amount of new business. Factories are in possession of ample stocks and are shipping without delay. Makers have not changed their published prices.

Enameled Ware

Effective on January 1, the majority of enameled ware manufacturers announced that they had withdrawn all preferentials, which move had a strengthening effect upon the price situation. The past two weeks did not bring a great amount of business to either manufacturers or wholesalers. Contractor demand is light and most jobbers are more concerned at present with auditing their 1929 business than taking in fresh material from factories. No delays are reported in shipments of staple items from sources of production.

Pottery

Pottery manufacturers are reported to have taken the same action as makers of enameled ware in the matter of withdrawing their preferentials. Calls from master plumbers for pottery are light, as is usual at this period of year, and wholesalers in turn, being occupied with inventory, are not taking in much material from makers. Potters are shipping staple items in quick time.

Plumbers' Brass Goods

Some reports are heard of wholesalers placing orders for brass goods for shipment at a later date but they are not especially numerous. In most cases distributors are devoting the bulk of their time to inventory. Contractor demand was light during the two weeks just passed, according to most reports. It is reported that on January 1 a number of brass goods manufacturers withdrew their preferentials, which move had a strengthening effect upon the price situation. Factory shipments are being made in quick time.

Range Boilers

Demand for range boilers from master plumbers was light during the fortnight just passed and, in turn, wholesalers were not taking in any large quantities of boilers from manufacturers. Factories have good stocks on hand and jobbers' holdings are average. Prices remained firm at current sheets of makers.

Boilers and Radiators

Activity among heating contractors was at no better than an average seasonal pace during the period covered by this report and manufacturers and wholesalers reported only a moderate call for heating equipment. Factories are making prompt shipments and have not changed their published prices to wholesalers since our last review was published. The market on boilers and radiators is reported firm at existing price levels.

CLEAN, CLEAR HOT WATER
always on tap from
NATIONAL
"Multi-Flow"
TANK HEATERS

Cut Away View, above

Large double wound copper coil with bronze connections guarantees clean hot water. Coils tested to 600 pounds pressure. Can be safely installed anywhere. Nothing to rust. Circulation rapid. Fire brick combustion chamber below coil not subject to chilling or killing of fire around outer edges, when the hot water is drawn off and the cold water rushes in. Produces abundant hot water 24 hours a day with little attention and at low cost. The only "Multi-Flow" Copper coil coal burning heater on the market. Efficient and built to last. Free of servicing troubles.

No. 12 Heater (illustrated) best suited to Average Single House

Also made in sizes No. 16 for large residence and No. 20 for apartment houses.

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There's a Moore Hanger for every type of radiator

MOORE Radiator Hangers have a wide scale of adjustment, both perpendicular and horizontal. No need to spend a lot of time taking accurate measurements and no doing the job over if the measurements are not hair-line.

Made for all types of radiators, including the new tube type. Furnished complete, all ready to install.

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It will not swell, elongate or distort in any manner.

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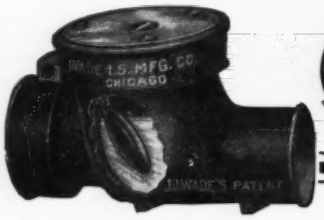

A FEW DOLLARS MORE

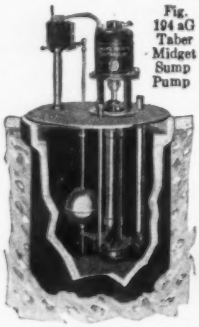

Fig. 194 aG Taber Midget Sump Pump

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NEW YORK

Heavier Demand Marks Turn of Year—

While wholesalers in this territory are mainly concerned at the moment with stock taking for inventory purposes and report that contractor demand is on the up grade; however, manufacturers state that requisitions from wholesalers have increased in frequency and size quite markedly since January 1st. The revision in quotations on enameled ware have inspired interest in some other commodities and engagements for brass goods, brass pipe and pottery have been made somewhat more freely.

In the upper New York State some hindrance to the movement of material is reported owing to severe weather conditions. In certain sections of the Metropolitan area such as Westchester County there has been a decided decline in residential construction during the recent past, according to statistics now released. However, the availability of credit for building purposes is said to have given a new impetus to plans for spring building in suburban areas and representative wholesalers look for a gradual improvement of business.

The Metropolitan area of New York had $10,321,200 in awarded contracts for new building and engineering work during the week ending December 27 (6 business days), according to F. W. Dodge Corp. The past week's record compares with $22,122,700 for work contracted for during the preceding week and $27,867,500 for the corresponding week last year. The following were the types of building found to be most active in the week: $5,039,900 or 49 per cent of all construction, for residential buildings; $2,970,800 or 29 per cent for educational buildings; $769,000 or 7 per cent for public works and utilities, and $635,600 or 6 per cent for commercial construction. The cumulative total of all construction started since the first of this year amounted to $1,221,214,300 as compared with $1,555,676,000 for contracts let during the entire year of 1928. Contemplated work reported in the week reached a total of $19,823,500 against $68,555,100 for the preceding week's record.

Soil Pipe

The volume of business in this commodity continues at a low ebb. Manufacturers report specifications as being light. Wholesalers state that their stocks of soil pipe are light. Production at most plants is reported to be on a part time basis. Stocks on hand at distributing points are likewise reported to be small. There have been no changes in quotations.

Pipe—Brass, Steel and Wrought Iron

The movement of brass pipe continues to be of a fill-in variety. According to the experience of some distributors it is found to be more advantageous to purchase thirty or sixty days' requirements at a time regardless of minor price fluctuations. Wrought iron and steel pipe have been moving in fairly good quantities during the past fortnight owing to industrial replacements which had been made during the year end shut downs for inventory by manufacturing plants. Prices applying to all types of pipe are unchanged and stocks on hand are of good working proportions at mills and are slated to be fairly low among wholesalers with a tendency to increase to normal proportions as specifications placed about the first of the year are received in warehouses.

Enameled Ware

The withdrawal of preferentials by a number of makers effective as of the first of the year has stimulated consid-

erable interest in this commodity. While demand during the last quarter was reported as being substantially below that of 1928 reports indicate that most wholesalers carried low inventories at the end of the year. Wholesalers' quotations were promptly revised to correspond with manufacturers' sheets and it is stated that inquiry has increased perceptibly during the past fortnight with some increase in buying.

Pottery

The revision of prices in the enameled ware division caused an awakening of interest in pottery. According to most reports, inventories at the end of the year indicated not more than two weeks' normal supply for most wholesalers. Inventories at plants reflected the decreased demand which was in evidence during the last quarter of 1929.

Plumbers' Brass Goods

Inventory taking at the end of the year revealed to many wholesalers that stocks on hand would hardly be termed "skeleton" under normal circumstances, but with contractor demand light, stocks in many instances are below an average level. The copper market is reported firm at existing levels.

Specifications at plants for cast brass have continued to improve since the turn of the year and tubular goods have likewise enjoyed the effect of an appreciable gain since inventory taking. There has been some falling off in demand for radiator valves during the past fortnight but it is felt in some quarters that heating goods in this division enjoyed a somewhat better demand than was anticipated during the early fall.

Range Boilers

The demand for re-installation which tended to maintain the range boiler division on a comparatively favorable basis during the last quarter of the old year was quiet over the holiday period, but since the first of the year there has been some specifying of boilers to replenish inventory. The schedule of prices by manufacturers which has been stable for almost a year remains unchanged. Several manufacturing plants closed down during the past fortnight for inventory purposes but shipments of ordinary items are made without delay from plant warehouses.

Boilers and Radiators

Replacement work still accounted for an appreciable percentage of the volume of business moving in this division, according to several wholesalers. The price structure remains unchanged among wholesalers and manufacturers. Inventories are reported as being at a minimum among wholesalers. It is reported that several wholesalers have purchased more freely during the past fortnight, having been waiting for the completion of inventory to bring their files of needed items up to date.

NEW ENGLAND

New Year Trading Is Light—

From both manufacturers' and wholesalers' standpoints the inception of the New Year has brought forth little in the way of increased volumes. Construction has lost momentum and its decrease has naturally resulted in the quiescence of contractors' activities. Shipments from wholesaling points during the first few days of the month were active in a way, but showed no signs of increase insofar as future commitments of plumbing and heating contractors were concerned.

Since the first of the year, wholesalers have been more

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concerned with the completion of their inventory records than with ordering for stock rehabilitations. The majority of jobbers, having closely gauged the buying trend, regulated their stocks in such manner as to show only comparatively small balances on their inventory sheets. Manufacturers' salesmen show little enthusiasm over the attitude which distributors have displayed in placing future delivery orders.

Soil Pipe

There has been little demand for soil pipe from the plumbing trade during the several weeks gone by. Foundries have not been exceptionally active in their production schedules but have been able to fill in, on short notice, deficiencies in wholesalers' stocks. Inventory taking has occupied distributors' attentions, in such manner that makers have been unable to book any really substantial business. The price situation from foundry and wholesaling standpoints has continued firm and unchanged.

Pipe—Brass, Steel and Wrought Iron

Stock maintenances of distributors over the first of the year period reflected in large measure the decline in contractor demand which had obtained during the closing weeks of the past year. Although complete tabulations of January first inventories are not yet available, some jobbers have deemed it necessary to commit themselves for stock rehabilitation purposes. Representing salesmen of various sources, however, report that buying interest of jobbers is far from spirited. Brass, steel and wrought iron pipe is of sufficient quantity, both at manufacturing points and at wholesaling centers, as to promptly satisfy existing demand. Prices are firm, no revisions in mill quotations having been reported.

Fittings

While contractors' requirements are not exceptionally brisk, wholesalers have evinced some inclination to bolster their stocks after their annual inventory taking disclosed shortages in many commonly called for sizes. Manufacturers have been actively soliciting first of the year orders from distributors but display at this writing no great enthusiasm over their results, for orders tendered reflect fill-in for safety purposes rather than anticipation of future increased demand. Makers have reported no revision in their price sheets.

Enameled Ware

Plumbing contractors are still calling for enameled ware in quantities which afford wholesalers comparatively good seasonal dispositions. Such demand, however, cannot be described as active for finishing processes have been decidedly on the wane during the past three or four weeks. Anticipation of stock taking on January first accounted for gradual reductions of wholesalers' stocks and there had been but little bolstering noted. Makers' bookings of carload quantities, while not extensive, have somewhat enlivened this situation, however, and upon delivery to jobbers' warehouses during the coming weeks, will tend to round out stocks which were formerly lean. Since our last report a number of makers have announced the withdrawal of preferentials.

Pottery

Movements of staple bowls and tanks from wholesalers' stocks continue to be of light nature. Consumption requirements contain a fairly good demand for special ware but there is nevertheless a noticeable drop in shipments from potteries and distributing points. Jobbers' first-of-the-year holdings showed but few surpluses of staples and their commitments so far for rehabilitation have not been extensive. Pottery representatives are optimistic over

The Stock Market

Range for Week Ending January 4, 1930†

Par Value	1929 High	1929 Low		*	Weekly High	Weekly Low	Weekly Close
NP	223⅜	77	Air Reduction Sales Co	A	130½	116⅛	126⅞
NP	55⅜	28	American Rad. & Stand. San. Corp	A	33½	29⅛	30⅜
25	144⅝	60	American Rolling Mills Co	A	84⅞	78⅞	81½
50	140	67¼	Anaconda Copper Mining Co	A	75⅝	72	75
NP	62	32	Bastian-Blessing Co	C	40	38	39
NP	140¾	73¼	Bethlehem Steel Co., Com	A	95⅛	91⅛	93½
100	128	116⅜	Bethlehem Steel Co., pfd	A	123¼	122¾	122⅞
NP	55¼	16¼	Brunswick-Balke-Collender Co	A	20⅝	19⅛	19⅜
NP	192⅞	50	A. M. Byers Co., com	A & E	94⅜	83½	91
100	121¼	105	A. M. Byers Co., pfd	A & E	109	109	109
100	127½	118	Century Electric Co., com	F	118	118	118
50	4¾	1	Chicago Nipple Mfg. Co., "A"	B	2¼	1	1
50	1½	1	Chicago Nipple Mfg. Co., "B"	B	1	1	1
25	48	42	Crane Co., com	C	44	43	44
100	119	112	Crane Co., pfd	C	113¼	113¼	113¼
20	21	11½	Eagle-Picher Lead Co	H	13⅛	12½	12⅝
NP	35	11	Fairbanks Co., pfd	A	22⅜	22⅜	22⅜
NP	34⅞	29¾	Fairbanks, Morse & Co., com	A	35⅞	33¼	35⅞
100	110⅞	101½	Fairbanks, Morse & Co., pfd	A	101½	101½	101½
NP	25½	12	Greenfield Tap & Die Corp	B	13	13	13
NP	38	22¾	Iron Fireman Mfg. Co	C	25	22¾	25
NP	242¾	90	Johns-Manville Corp., com	A	128½	116	121⅝
100	123	118	Johns-Manville Corp., pfd	A	121½	121¼	121¼
100	126	117	Jones & Laughlin, pfd	A & E	118½	118½	118½
NP	123¼	59	Minneapolis-Honeywell Reg. Co., com	A	67	64¼	65¾
NP	75	48	Modine Mfg. Co	B & C	50	48	50
NP	55⅛	21	Motor Wheel Corp	A	27¼	26⅜	27
NP	67½	30	F. E. Myers & Bro. Co., com	A	39⅝	35⅜	39⅜
100	105	101½	F. E. Myers & Bro. Co., pfd	G	102½	101½	102⅜
100	210	129¼	National Lead Co., com	A	140¼	134¼	137
100	141½	138	National Lead Co., pfd. "A"	A	140	138	138¼
100	122	116	National Lead Co., pfd. "B"	A	116⅛	116⅛	116⅛
NP	17	1½	National Radiator Corp., com	A	2½	1⅝	2
NP	41	1½	National Radiator Corp., pfd	A	4¼	2¼	4¼
5	31	23	Herman Nelson Corp	B	27¾	27¼	27¼
NP	92	69	Ohio Brass Co., "B"	B & G	73	70	70
NP	31½	25	Revere Copper & Brass, Inc., com	A	30	27	30
NP	108½	103	Revere Copper & Brass, Inc., pfd. "A"	A	103	103	103
NP	19⅝	2⅛	Richmond Radiator Co., com	B	2⅝	2½	2½
NP	38⅞	8	Richmond Radiator Co., pfd	B	9	8	8¼
NP	44½	29	Ruud Mfg. Co	C	29	29	29
NP	52¼	15	Spang, Chalfant & Co., com	A	20	18	20
100	98	89	Spang, Chalfant & Co., pfd	A	96	96	96
NP	39½	20	Time-O-Stat Controls Co., "A"	C	25⅜	25	25⅜
NP	140	59	Union Carbide & Carbon Corp	A	80½	75	79
20	55⅞	12	U. S. Cast Iron P. & F. Co., com	A	19½	18	19
NP	19	15	U. S. Cast Iron P. & F. Co., 1st pfd	A	16	15½	15⅞
NP	20	18¼	U. S. Cast Iron P. & F. Co., 2nd pfd	A	18½	18¼	18½
NP	62¼	35	U. S. Radiator Corp., com	B & D	43	42	42
100	100	100	U. S. Radiator Corp., pfd	D	100	100	100
NP	65	15	U. S. Rubber Co., com	A	26⅜	23	26⅜
100	92½	40⅛	U. S. Rubber Co., pfd	A	52	45	52
100	261¾	150	U. S. Steel Corp., com	A	173¾	164¾	169⅛
100	144¼	137	U. S. Steel Corp., pfd	A	141⅞	141¼	141¾
NP	22½	2⅛	Universal Pipe & Radiator Co	A	3¾	2¼	3
NP	49⅞	22	Walworth Co	A	28¼	26	26
NP	35	6½	Wayne Co., com	B & C	9¼	8	9¼
NP	46	25	Wayne Co., pfd	B & C	28½	28	28
100	110	93	Wheeling Steel Corp., com	B	110	108	110
100	135½	131½	Wheeling Steel Corp., pfd. "A"	B	133	133	133
NP	29¾	16	Williams Oil-O-Matic Htg. Corp	C	16	16	16
NP	59¾	33½	Youngstown Sheet & Tube Co	A	37½	35	36¾

*Where listed—

A—New York Stock Exchange
B—New York Curb Exchange
C—Chicago Stock Exchange
D—Detroit Stock Exchange
E—Pittsburgh Stock Exchange
F—St. Louis Stock Exchange
G—Cleveland Stock Exchange
H—Cincinnati Stock Exchange

†If there is no trading during the current week, range represents last week recorded.

what the several following months will reveal. Shipments in all cases are being satisfactorily executed.

Plumbers' Brass Goods

Activities in this commodity, having been somewhat restricted during the past month or more, do not seem to have been largely expanded. Contractor demand for cast and tubular goods to be used in fixture setting does not account for broad movements from wholesalers' stocks. The majority of distributors have not as yet recovered from their inventory rush to place orders for any sizeable quantities. Factories show ability to fill jobbers' placements on short notice.

Range Boilers

Insofar as consumption requirements of range boilers have not been heavy, manufacturing plants have not experienced much breadth in their shipments. Wholesalers have been buying as definite needs occurred and inventory taking consequently found them with small holdings. Post-inventory orders of distributors have not as yet assumed large proportions. Deliveries in all cases are promptly attended. Producers' quotations are unchanged.

Boilers and Radiators

There still obtains a comparatively fair seasonal demand for heating equipment and manufacturers were in receipt of quite a number of orders for boilers and radiators which distributors had refrained from placing until after January 1. Foundry and local warehouse holdings are of sufficient size to permit unextended delivery service. No price changes have been effected by makers.

SOUTHEAST

Business Continues Seasonal—

The plumbing and heating business at the close of the year in the Atlanta area was irregular and had a slightly downward trend. This was due partially to the inventory season and the fact that jobbers were reluctant to place factory orders specifying large quantities. However, most observers state that the lull in business is no more than expected at this season of the year, when wholesalers and contractors are adjusting their business and stocks for the coming new year. While most jobbers have pared their stocks to the minimum, they are prepared to meet the current demands of the contractors and no delays on this score have been reported. Architects and engineers in the Atlanta territory report, generally, a good construction prospectus for the near future and have a number of major projects in the preliminary stage.

Soil Pipe

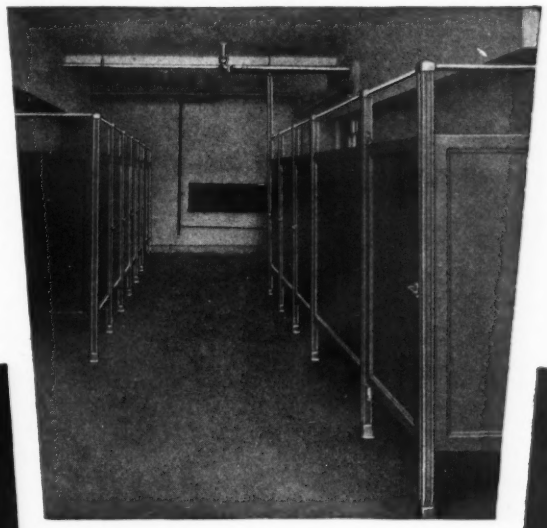
Soil pipe makers indicate little change in demand from wholesalers since our last report, and with the inventory season underway, sales are not expected to gain materially for several days yet, according to several wholesalers interviewed. Jobbers are maintaining ample stocks to care for the immediate demands of the trade and no difficulty has been reported securing supplies as ordered. No price change has been announced.

Pipe—Steel and Wrought Iron

Demand for both steel and wrought iron pipe continued seasonal and there is little new to report. Sales were rather sporadic and on the whole pipe movement was slow for the past fortnight. The past several weeks contained no price change and jobbers are holding steadily at the current sheets. Stocks are of good assortment and factories are making prompt deliveries.

Fittings

Cast iron and malleable fittings moved at a moderate rate for the past two weeks, with orders specifying small



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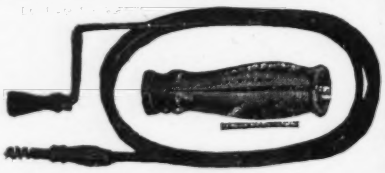
STEEL TOILET & SHOWER
PARTITIONS



Flexible Coil Wire Sewer and Pipe Auger with an automatic grip handle.

Coleman's

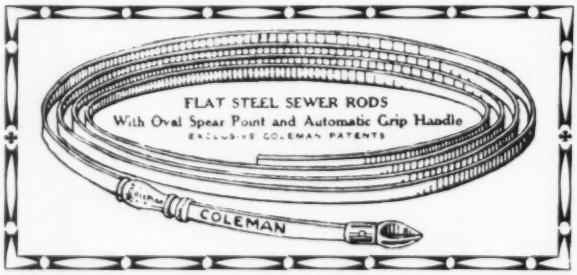
Why waste time with makeshift equipment when Coleman sewer and drain cleaning tools are so easy to handle, so thorough in operation and so reasonable in cost?

If you haven't got Coleman equipment, you are working under a handicap.

Ask your jobber to show you the Coleman line of Plumbers' necessities—or write us direct for full information.

Allan J. Coleman

208 N. Wabash Ave. CHICAGO, ILL.



Buy them from
HINDLEY

CLOSET BOLT

Specialties that come from Hindley's are made right, packed right, shipped right and in a hurry.

They're handy for stocking and handier for working with. Right where you want them, when you want them.

TANK ELL SCREW

Order a stock of them now. Have them on hand for instant use.

HINDLEY MANUFACTURING CO.
VALLEY FALLS, R. I.

The Metal Market

	Jan. 7	Dec., 1929	Oct., 1929	1928
PIG IRON—				
No. 2 foundry, Chicago	$20.00	$20.00	$20.00	$18.54
PLATES AND SHEETS—				
Steel boiler plates, Pittsburgh, per lb.	1.90c	1.90c	1.95c	1.87c
*Blue annealed sheets, No. 13, Pittsburgh, per lb.	2.25c	2.35c	2.35c	2.03c
Black sheets, No. 24, Pittsburgh, per lb.	2.70c	2.75c	2.80c	2.75c
Galvanized sheets, No. 24, Pittsburgh, per lb.	3.40c	3.40c	3.50c	3.50c
TIN—				
Straits tin	40c			
LEAD—				
Chicago	6.25c			

The Old Metal Market
Dealers' Buying Prices

	Per lb.		Per lb.
Aluminum clippings	16 c	Copper, light	12½c
Block tin	35½c	Copper, uncrucibled wire	14¼c
Brass, light	7¼c	Faucets and valves	9½c
Brass, heavy mixed	8½c	Lead, heavy	5½c
Brass, red	11½c	Solder Joints	8¼c
Copper, crucible	14¾c		

NOTE: Prices are those quoted on Tuesday of this week.
* Comparisons are with old blue annealed base, No. 10.

quantities. A slight increase in factory-placed orders was experienced. Jobbers in the Atlanta area are able to handle orders promptly and a good assortment of various types of fittings are stocked. No changes in price sheets have been announced and deliveries are promptly made.

Enameled Ware

Enameled ware movement into consumption was reported to progress at a fair rate, according to most jobbers interviewed. Master plumbers are chiefly engaged in reinstallation and repair work, with little new business developing. As a rule, jobbers are paring their stocks to the minimum, but are maintaining quantities sufficient to meet the current demands of the trade.

Pottery

Sales in pottery were reported as light and seasonal with little new business shown, according to most jobbers interviewed. Jobbers are rather cautious in placing orders with makers and are keeping their bins of a size to meet the immediate needs of the pottery contractor. Deliveries have been prompt and the price situation remains firm.

Plumbers' Brass Goods

The demand for plumbers' brass goods continued at a moderate rate and most purchasing was for contracts closed and little, if any, inquiries out are for future requirements. Distributors generally have stocks sufficient to take care of all of the trade's anticipated needs. No change in prices has been reported and producers are able to meet all demands in a prompt manner.

Range Boilers

Prices in range boilers remained firm and unchanged during the past two weeks and wholesalers are amply supplied with boilers and equipment to meet the requirements of the master plumber. On the whole, sales in range boilers were rather light and seasonal. Factory placed orders were few, and jobbers are holding to the policy of reducing their stocks to the minimum. No change in prices was announced and deliveries were prompt and regular.

Boilers and Radiators

The demand for boilers and radiators held steadily good to the end of the year, and while sales as a whole,

No. 10

M-VB BALLCOCKS

No. 15

This line of ballcocks includes many more than those illustrated. It provides a wide range in price, and design. From No. 10, the leader in adjustable quiet ballcocks to No. 15 for service at a price, they all have that built in quality which has made M-VB famous. Send for a catalogue.

No. 1

No. 6

ASK FOR AN

M-VB

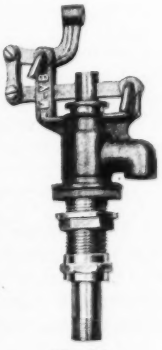
No. 17

No. 60

No. 17A

No. 4

No. 12

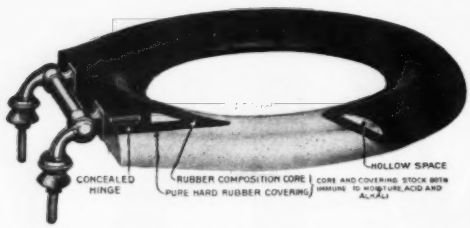

No. 25

SCOVILL MANUFACTURING CO.

MORENCY VAN BUREN DIVISION

STURGIS, MICHIGAN

No. 10A


HOLLOW SPACE
CONCEALED HINGE
RUBBER COMPOSITION CORE
PURE HARD RUBBER COVERING
CORE AND COVERING STOCK BOTH IMMUNE TO MOISTURE, ACID AND ALKALI

"EVERNU" Construction and Advantages

The acceptance of "EVERNU" Hard Rubber Seats by leading architects and builders—the absence of a single unfavorable criticism—the perfect service of every "EVERNU" Seat that has been sold is conclusive evidence that "EVERNU" is the ideal seat for any installation, including Hotels, Office Buildings, Apartments, Clubs, Schools, Industrial Buildings and fine homes.

"Construction"

"EVERNU" Seats are hollow except across the back where they are made solid and into which solid portion the hinges are attached. The interior wall of seat is made of a special hard rubber of great strength. The exterior or outside surface is made of pure hard rubber (Ebony or Mahogany in color.) The interior and exterior materials are molded together when in a plastic state and vulcanized under tremendous hydraulic pressure into one everlasting, indestructible unit. The hollow center provides lightness and strength. There are no joints to open, no cracks nor crevices in the surface for dirt to collect.

"Hinges"

"EVERNU" Seats can be equipped with N. P. Brass, White Metal, "Crodon" Plated or Black Molded Hinges with or without check.

"Guarantee"

"EVERNU" Seats are unconditionally guaranteed not to split, break, crack, or craze.

"EVERNU" Seats can be made to comply, in every respect, with Government Specifications.

Complete catalog and cross section will be mailed on request.

NEVER-SPLIT SEAT COMPANY

EVANSVILLE, INDIANA

were smaller than a year ago, yet most heating contractors were fairly well engaged and a moderately good business was had. Due to the inventory season, factory orders were light and jobbers are reducing their stocks to the minimum. Deliveries from all sources are reasonably prompt and no price change developed.

PACIFIC COAST

Moderate Demand Prevails—

Coast business continues to be of a moderate nature with demand for material not very heavy but a little better in some sections than in others. No new building work has opened up to any extent as yet, although the indications are that it should commence to do so before long, according to reports. Distributors generally have stocks sufficient to take care of the present volume offered without delay. Distributors' prices to the trade, while varying somewhat in the different jobbing centers, on the whole continue to hold firm.

Soil Pipe

Soil pipe continues to move mostly in small quantities for immediate requirements and the total volume moving at present is not large. Distributors' stocks are sufficient to take care of the trade's present requirements without delay and distributors have also stocked for their first quarter requirements. Prices by all concerned remain unchanged.

Pipe—Steel and Wrought Iron

Steel pipe continues to move mostly in small lots for immediate requirements with the gross volume not very large, but about normal for this period of the year. Distributors of steel pipe, generally, have well balanced stocks and the trade's needs are taken care of promptly as they arise. Wrought iron pipe continues to move in small lots for immediate requirements only with the total volume not very large. Distributors of this commodity are carrying stocks sufficient to take care of the trade's anticipated needs so that prompt delivery can be made on all orders received. Prices by all concerned remain unchanged.

Fittings

The demand for cast iron screwed, malleable and drainage fittings is not heavy, the trade purchasing only in small lots as their need for material arises. Distributors have about average stocks for this period of the year, sufficient to take care of all of the trade's present needs. Distributors can secure prompt shipment from factories and manufacturers' warehouses. Distributors' prices to the trade on fittings remain unchanged.

Enameled Ware

Buying of enameled ware continues at a moderate rate, with the trade waiting until a definite need for material is created. Distributors are carrying about average stocks for this period of the year and can secure prompt shipment from all coast manufacturers and manufacturers' warehouses.

Pottery

The present demand for pottery is not heavy, the trade purchasing only such ware as is required for immediate use and few if any inquiries are out for future needs. Distributors' stocks are about average for this period of the year and coast potteries and manufacturers' warehouses are in a position to furnish the distributors with all classes of ware promptly.

Plumbers' Brass Goods

The demand for plumbers' brass goods continues to be in good volume, better in some sections than in others.

Distributors are carrying stocks sufficient to insure prompt delivery of all orders received and can also secure early shipment from manufacturers. Distributors' prices to the trade vary somewhat in the different jobbing centers, and are more firm in some than in others. Manufacturers had not changed their published prices to wholesalers in this section at the time of going to press.

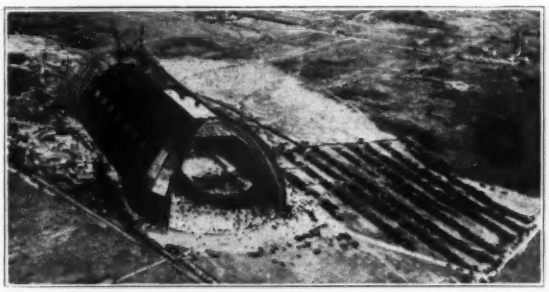
Range Boilers

The demand for range boilers shows little change from week to week and continues to be of a moderate nature, with most of the trade purchasing only small lots for immediate needs. Distributors are carrying stocks sufficient to insure prompt delivery of all orders received and replacing merchandise in about the same volume as sales. Distributors' prices to the trade remain unchanged since our last review.

◆

Steam Radiators to Be Used in Heating World's Largest Dirigible Factory and Hangar

The world's largest dirigible factory and hangar, located at Akron, Ohio, is to employ steam for heating. At the present time plans call for the heating of only the shops and offices which are to be built along both sides of the structure, the space provided for them being about 40 ft. wide by 640 ft. long. Ceiling height is to be about 35 ft. While all of this allotted space eventually will be used by the officers and shops, immediate requirements will be accommodated by the space provided along the east wall of the structure.

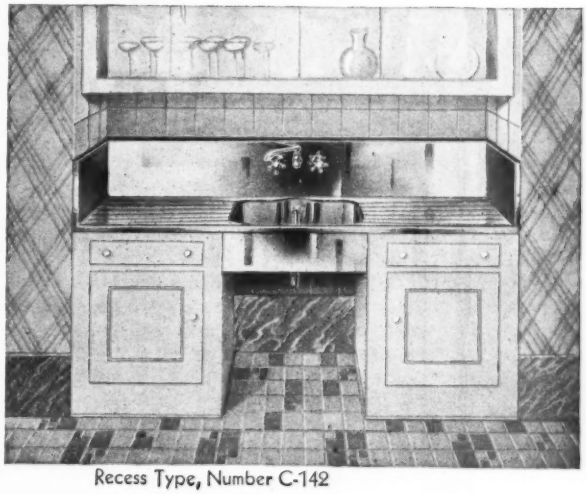


Airplane view of the world's largest dirigible factory and hangar taken during the ring-laying ceremony of the ZRS-4, which will be the world's largest dirigible. Present plans call for the heating of the shops and offices with steam radiators using gas as a fuel

The entire initial radiation of approximately 4,000 sq. ft. will be vented and will consist of nine 20-section, 4-column radiators 38 inches high; six 19-section; nine 18-section; one 17-section; thirteen 15-section and two 13-section radiators.

It is stated that probably there will not be much heat provided in the hangar proper, although it has been proposed that clusters of steam radiators be installed to temper the air in the hangar on the coldest days. Complete heating of the structure would assume tremendous proportions due to its size as indicated by the fact that its height equals that of a 22-story building and its floor space is large enough to permit ten football games to be played under its roof at the same time. From an aviation standpoint, its capacity will permit the housing of two super-Zeppelins at the same time. Gas fuel will be used in heating and helium gas will be used exclusively in the Zeppelins built and housed at this plant.

Leading Architects specify Elkay Pantry Sinks



Recess Type, Number C-142

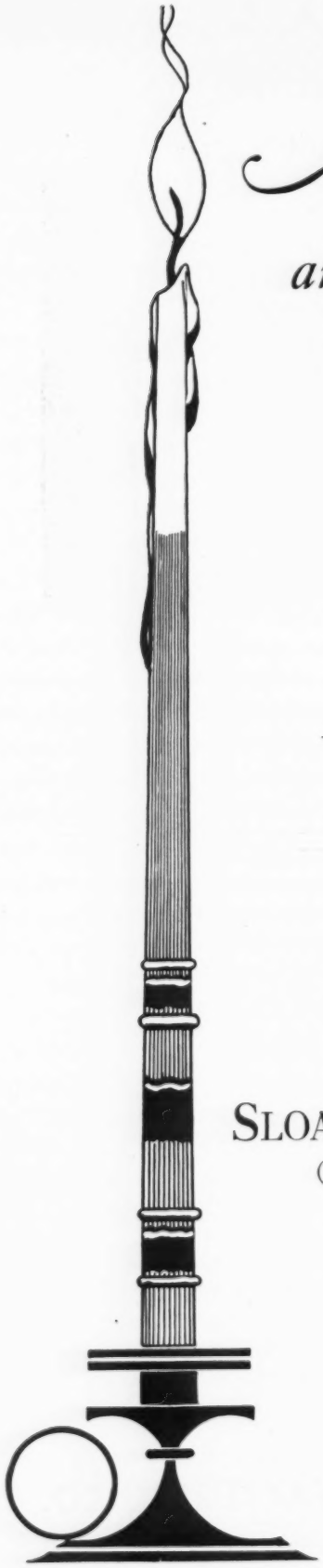
FOR their beauty, for their superior construction and for the variety of designs and styles in which they are furnished, Elkay Butler's Pantry Sinks are specified on most important hotel, residence and apartment installations. Leading architects recognize Elkay quality, superior craftsmanship and clever styling.

• The fine metal sets over the wood underframe as perfectly as if molded. All seams are double-interlocked. Joints are soldered on the under side thus giving to the fixture that finished, well groomed appearance which is so vital in installations of high character. • Elkay Butler's Pantry Sinks cannot warp as the underframe is cured with two coats of heat and moisture proof enamel. They are made in White Metal, Monel Metal, Polished Copper, Crodon Plate and 99% pure nickel.

• There is an opportunity for every progressive Wholesaler or Contractor to make new friends and to secure more profitable interests with Elkay Pantry Sinks. Illustrated catalog C-1 will be sent on request.

ELKAY MANUFACTURING CO.

4703-4713 Arthington Street, Chicago



A GREETING *and an* APPRECIATION

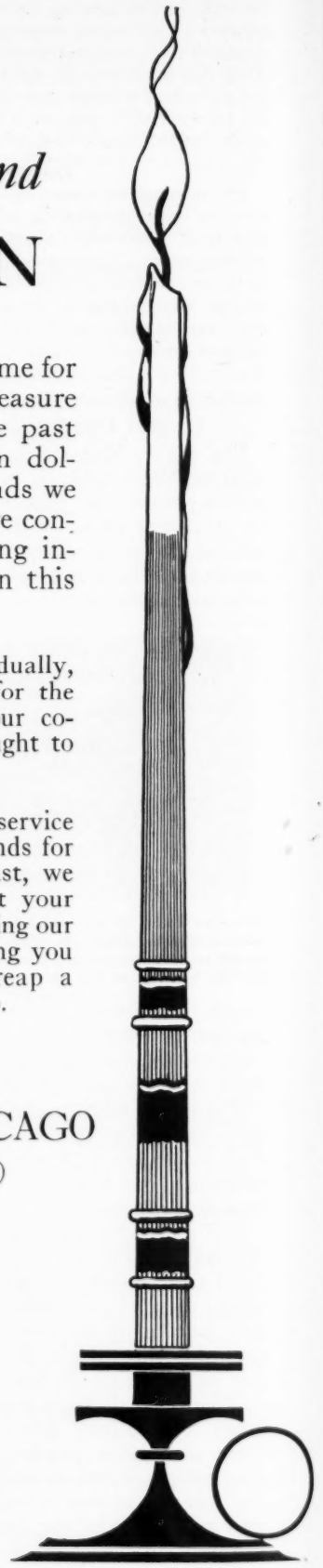
The New Year is a fitting time for each of us to cast up and measure the progress made during the past twelve months—not merely in dollars and cents but in the friends we have made and the old ones we continue to retain. The plumbing industry has been good to us in this respect.

As an organization and individually, we wish to express our thanks for the generous measure of business your co-operation and patronage has brought to us during the year just passed.

We hope furthermore, that our service has resulted in creating more friends for you. In the future, as in the past, we shall continue our effort to merit your good will and respect, by maintaining our leadership in every way and serving you to the end that you too may reap a greater measure of success in 1930.

SLOAN VALVE CO. -- CHICAGO

(*Makers of Royal, Marine and Gem Flush Valves*)



MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

Volume Drops In 1929—Prices Show Strength

IN COMPARISON with the preceding two or three years 1929 will go down in history as a year of smaller volume for the average manufacturer and wholesaler of plumbing and heating materials, and contractors' totals naturally suffered in about the same proportion. One factor that cannot be overlooked when reviewing 1929 business in plumbing and heating, since it is mentioned in the majority of reports received, is that the year was more satisfactory to sellers from the standpoint of percentage of profit than 1928, which naturally helped somewhat to counterbalance the year's reduced volume. The last two or three years have been exceptionally voluminous ones for the industry and even though volume suffered this year for the average manufacturer and wholesaler, the fact remains that 1929 was, in round numbers, about a five and one-half billion dollar building year. While this represents a falling-off from 1928 and other recent years, it still holds that with a new construction program of this size the industry is offered a substantial volume of business. The fact that the decrease in new contracts was largely confined to residential building probably made the condition more keenly felt by the plumbing and heating industry.

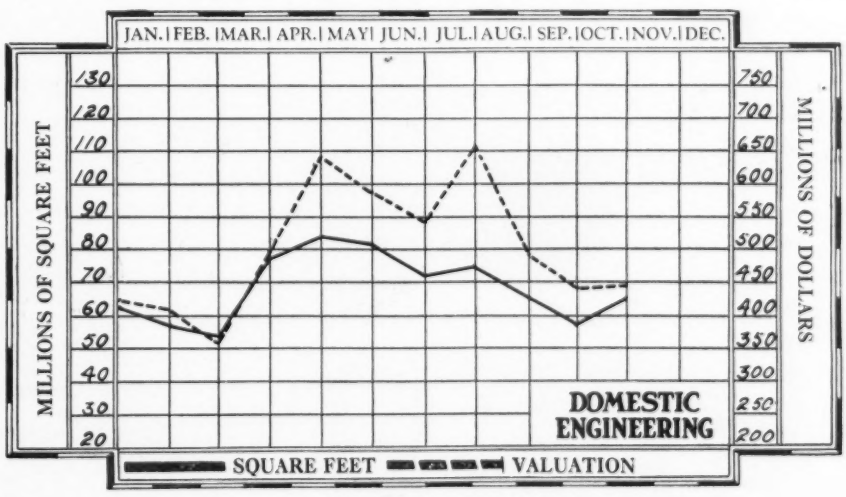
It is a quite generally accepted axiom that "as the bathtub goes so goes plumbing and heating." Accepting the bathtub as a criterion of plumbing and heating it is possible to draw a fairly accurate comparison of 1929 business with that of the year before from figures gathered by the department of commerce from some twenty-two manufacturers. In the first eleven months of 1929 shipments of tubs totaled 890,343 as against 1,057,927 for the corresponding period of 1928. This represents a decrease of about 15 per cent.

Business, generally speaking, was slow in gaining momentum at the start of the year. Wholesalers, as usual, had reduced their holdings to a minimum in preparation for their annual stock-counting, but it was not until the latter part of March that contractor demand reached a point where jobbers found it necessary to order material in any real quantities. There were exceptions to this mode of buying, of course, where manufacturers advanced their prices and jobbers found it good business to cover on their future requirements. During the early part of the year frequent advances occurred in the price of copper and these were quickly reflected in the asking prices of manufacturers of all kinds of brass items. Soil pipe, range boilers, wash-down bowls and tanks and cast iron fittings were other commodities where jobbers, because of price advances by makers, purchased freely in the first quarter.

Except to take advantage of situations similar to those mentioned above, it was the general practice of wholesalers all through the year to purchase only in small quantities to meet their near-at-hand requirements. At no time during the year were wholesalers seriously inconvenienced because of inability to secure material from their manufacturing sources of supply, where production was well geared to demand.

The announcement early in the year by wrought iron pipe mills of a suggested minimum resale price for their distributors and like action by most of the steel pipe mills at a later date had a stabilizing effect upon the market. Another factor of importance to the industry to develop during the year was the adoption by the manufacturing and wholesale divisions of a set of trade practice rules and the formation of the National Plumbing and Heating Institute.

According to the F. W. Dodge Corp., new building and engineering work started in the thirty-seven states east of the Rocky Mountains during the first eleven months of 1929 amounted to $5,437,922,400, as compared with $6,195,529,800 for the corresponding period of 1928, the decrease being 12 per cent. The chart on this page shows the trend of building activity.



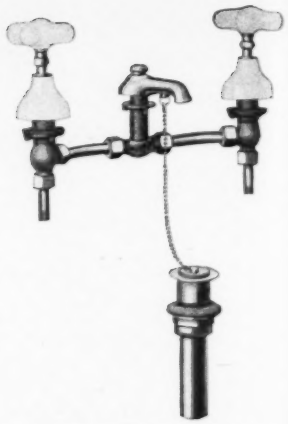
The above chart is based on figures secured from F. W. Dodge Corp. and shows how construction contracts were awarded in the 37 eastern states in 1929

No. 3510 CHINA SPOUT
No. 3500 BRASS SPOUT

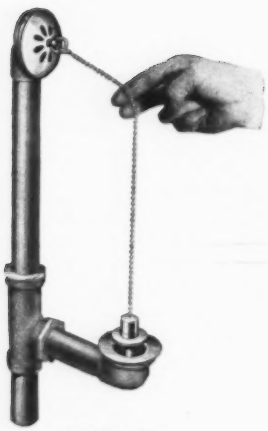
NEW STYLE CONSTRUCTION

No. 626-H COMBINATION SINK FIXTURE
Female Flange, with Soap Dish and Hose Spray

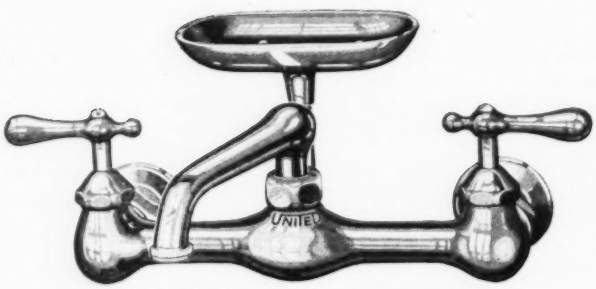
No. 630-H COMBINATION SINK FIXTURE
Male Flange, with Soap Dish and Hose Spray



3520 WITH P. O. PLUG



No. 296 Series
PULL CHAIN LIFT
WASTE METAL PLUG



No. 627—Female Flanges with Metal Dish and Meta Handles
No. 628—Female Flanges with China Dish and China Handles
No. 631—Male Flanges with Metal Dish and Metal Handles
No. 632—Male Flanges with China Dish and China Handles

No. 420
PRESSURE RELIEF VALVE
⅜ AND ½ SIZE

"Enduring Quality"
Dependable — Attractive

Ask Your Jobber for Revised Catalog and Price Sheet H-5

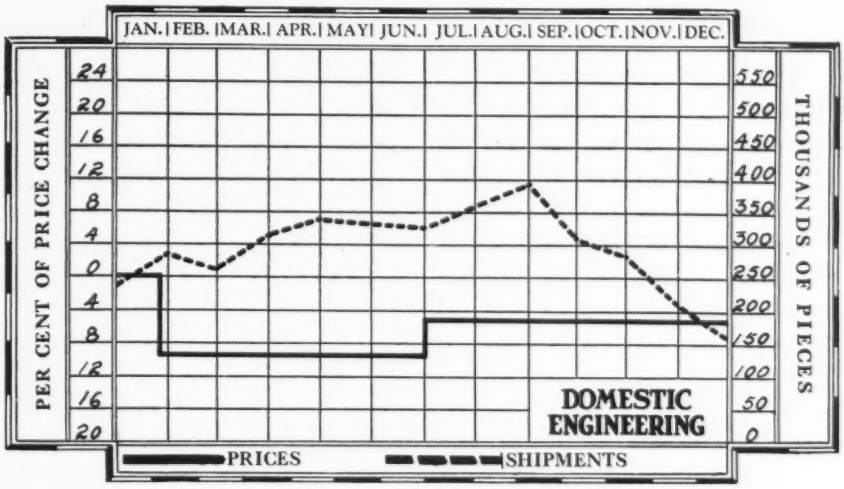
UNITED

TRADE MARK REG. IN U. S. PAT. OFFICE

UNITED-OBERNDORF CORP., CLEVELAND, OHIO

No. 751
COMBINATION BATH SET

Enameled Ware Shipments Were Lighter



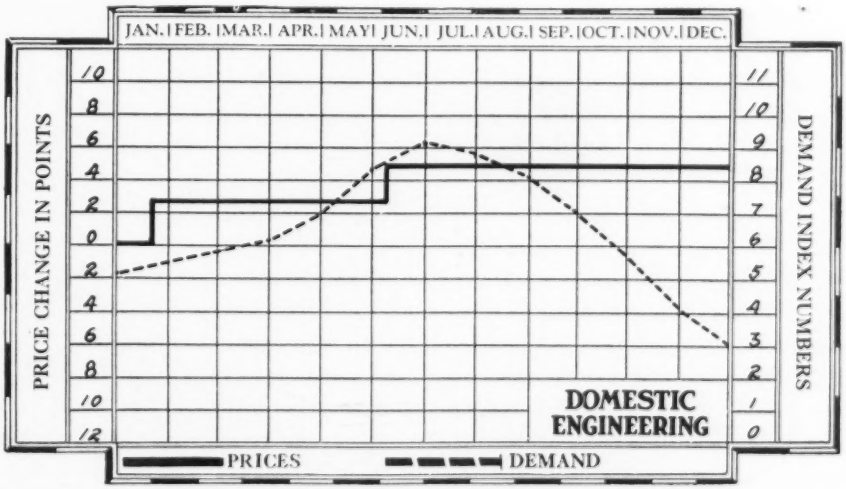
DURING the first eleven months of 1929 there were 3,458,420 pieces of enameled sanitary ware shipped by manufacturers, according to figures supplied by the department of commerce, as compared with 4,018,780 pieces for the corresponding period of 1928. This represents a falling-off in shipments for the first eleven months of 1929 of approximately 14 per cent, in comparison with the corresponding period of 1928. The "shipment" line on the chart is based on these department of commerce figures and shows just how the business was distributed over the year. At the time of going to press, figures for December had not yet been released and so this month is necessarily estimated.

Of the total pieces shipped during the eleven months of this year, 890,343 were tubs, 1,050,146 were lavatories, 1,089,679 were sinks, and 428,252 were miscellaneous ware. The totals for the same period of 1928 were: 1,057,927 tubs, 1,193,613 lavatories, 1,243,540 sinks, 523,700 miscellaneous ware.

When the year opened, manufacturers' prices were at the level established in April, 1928, when an advance was announced. The first price change in 1929 was made late in January, at which time most staple items were reduced about 10 per cent. Shipments were light in January and February, but March, April, May, June and July were fairly steady months, although not heavy in volume. On August 1, makers advanced prices on an average of about 5 per cent and the month accounted for the best volume of the year. September, October, November and December showed a steady falling-off in the volume of business.

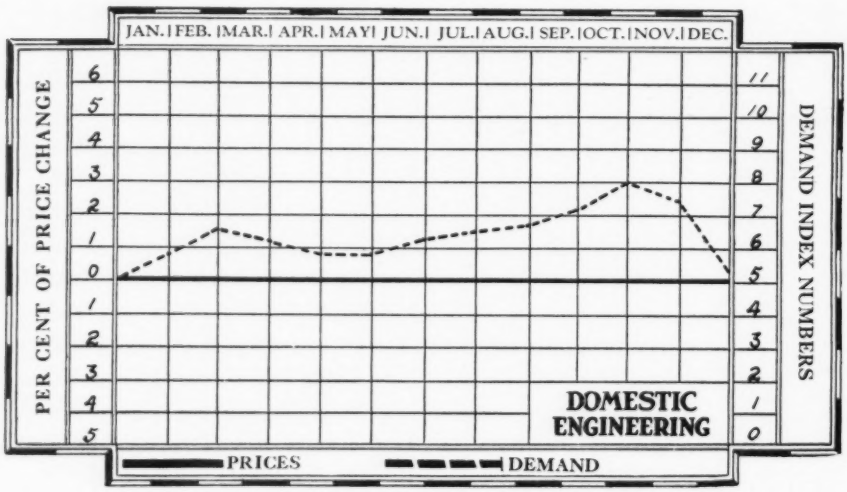
Soil Pipe Prices Were Firm

ONE of the features of the soil pipe market in 1929 was the high level at which manufacturers' published prices held during the twelve months. In 1928 soil pipe prices were changed no less than seven times and the market was weak. In the year just passed, however, makers changed their prices to wholesalers on only two occasions and each change was in the form of a price advance. The first of these occurred about the middle of January and the second was announced toward the early part of June. Both advances amounted to 2½ points. In-



asmuch as definite information is not available regarding shipments of soil pipe, the "demand" line on the chart is necessarily guided by information secured for the regular market reports. The year opened with some increase in volume, covering shipments and specifications which had been delayed from the year-end, and the two price changes also served to quicken wholesalers' interest in buying. However, the usual seasonal increase in the spring was less than in previous years. During mid-summer little tonnage was placed as contractor demand was not of sufficient proportions to lower jobbers' holdings to the point where it was necessary for them to re-order. Last quarter buying was light. Jobbers are entering the new year with fair holdings.

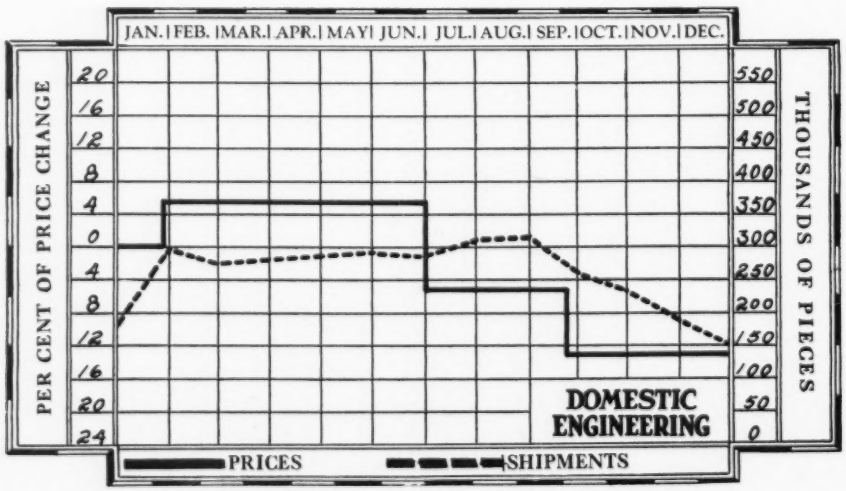
Steel Pipe Tonnage Was Fair


JAN. | FEB. | MAR. | APR. | MAY | JUN. | JUL. | AUG. | SEP. | OCT. | NOV. | DEC.
PER CENT OF PRICE CHANGE
6 5 4 3 2 1 0 1 2 3 4 5
DEMAND INDEX NUMBERS
11 10 9 8 7 6 5 4 3 2 1 0
DOMESTIC ENGINEERING
PRICES
DEMAND

SINCE actual figures are not available on the tonnage of steel pipe consumed in the plumbing and heating field, the "demand" line on the accompanying chart is based on information secured for the regular "Domestic Engineering" market reports. Demand was of a more or less steady nature all year and, consequently, makers aggregated fairly satisfactory sales records by the close of the year. Distributors indicated their needs only as their stocks diminished and, as in the latter months with the heating season before them, increased the size of their stock orders as progression of demand indicated. Deliveries from mills were prompt at all times as production was well maintained all year.

During September the majority of steel pipe mills suggested to their distributors that a certain scale of minimum resale prices be effected. This idea was not only well complied with, but it also considerably bolstered the whole price structure. The "price" line on the chart is straight as no changes were made in manufacturers' base prices during the year.

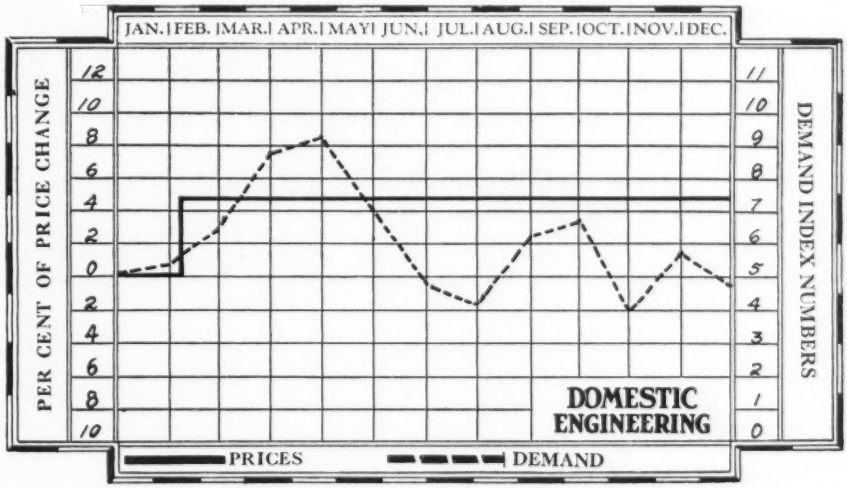
Pottery Moved At Slower Pace


JAN. | FEB. | MAR. | APR. | MAY | JUN. | JUL. | AUG. | SEP. | OCT. | NOV. | DEC.
PER CENT OF PRICE CHANGE
20 16 12 8 4 0 4 8 12 16 20 24
THOUSANDS OF PIECES
550 500 450 400 350 300 250 200 150 100 50 0
DOMESTIC ENGINEERING
PRICES
SHIPMENTS

THE "shipment" line on the chart on page 158 is based upon figures obtained each month from the department of commerce and gives a clear picture of the movement of pottery during the first eleven months of 1929. At the time of going to press, totals had not yet been released for December and so shipments for this month are necessarily estimated. In the first eleven months of 1929 shipments totaled 3,036,216 pieces, as compared with 3,185,447 pieces for the corresponding period of 1928, which represents a falling-off of approximately 5 per cent for 1929. The chart shows that shipments maintained a fairly steady pace from January through June. July and August were a little better than any of the previous months, and then from September to the end of the year volume steadily fell off.

The "price" line is representative only of wash-down bowls and six-gallon tanks. The prices in effect when the year opened were established in February, 1928, when an advance of 18 per cent was announced by makers. The first change in 1929 occurred toward the end of January, with an average advance of about 5 per cent. On July 1 bowls and tanks were reduced in price about 10 per cent, and late in September manufacturers announced a further reduction on these items of about 8 per cent. Except to take advantage of price advances, wholesalers showed little willingness to contract for their future requirements. Potters maintained good stocks of staples at all times and shipments were generally prompt. Jobbers are, for the most part, entering the new year with no better than average holdings of pottery.

Fittings Moved Steadily


JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.
PER CENT OF PRICE CHANGE
12 10 8 6 4 2 0 2 4 6 8 10
DEMAND INDEX NUMBERS
11 10 9 8 7 6 5 4 3 2 1 0
DOMESTIC ENGINEERING
PRICES
DEMAND

THE "demand" line on the chart indicates as clearly as possible, without actual figures being available, the movement of malleable, cast iron screwed, flanged and drainage fittings during 1929. The line is based on information gathered during the year for the market reports of "Domestic Engineering." These reports indicate that brass fittings followed a line very similar to the one on the chart.

The "price" line shows the changes made by manufacturers during the year in their prices to wholesalers on malleable and cast iron fittings. The only change in manufacturers' prices on these two types of fittings occurred early in February when an advance was made. The advance in prices found wholesalers with no better than average stocks and, as a result, makers were able to book considerable business as jobbers moved to anticipate their needs. Makers' representatives report a fairly good year, although in most cases not comparable with 1928. Wholesalers, except where price changes made liberal buying good business, maintained their policy of buying only as definite needs were created. Producers' stocks were such as to insure jobbers of prompt replacements at all times.

Concurrent with the strength of prices in other brass commodities, advances in their quotations to distributors were effected by makers of brass fittings during February and March. The price situation on all classes of fittings maintained an even trend from March to the end of the year.

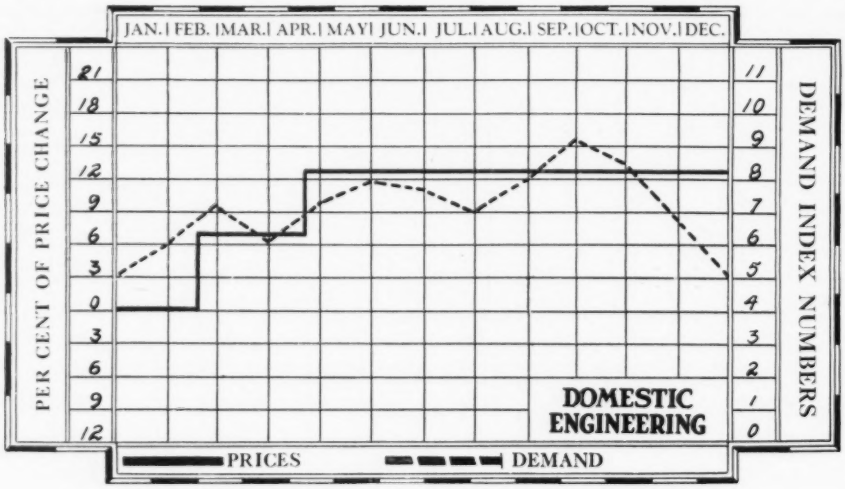
Range Boilers Enjoyed Firm Market

WHILE most manufacturers of range boilers indicate that their volumes for the year were only "fair," the strength which attended the price situation throughout the greater part of the year is pointed to with considerable satisfaction by producers. A few makers claim volumes equal to last year's, but in the majority of cases it is said that business this year was not equal to that of 1928.

The year opened with the prices established on July 2, 1928, in effect. The first change in manufacturers' prices to wholesalers occurred about the middle of February and was in the form of an advance. Then toward the latter part of April manufacturers again advanced their prices by issuing new sheets. The "price" line on the chart shows both of these advances, but deals only with the 30 and 40 gallon sizes of boilers.

Jobbers entered the year with only average stocks of range boilers on hand and the February advance in prices brought out a fairly good amount of business. Contractor demand at this period was only fair. The second advance

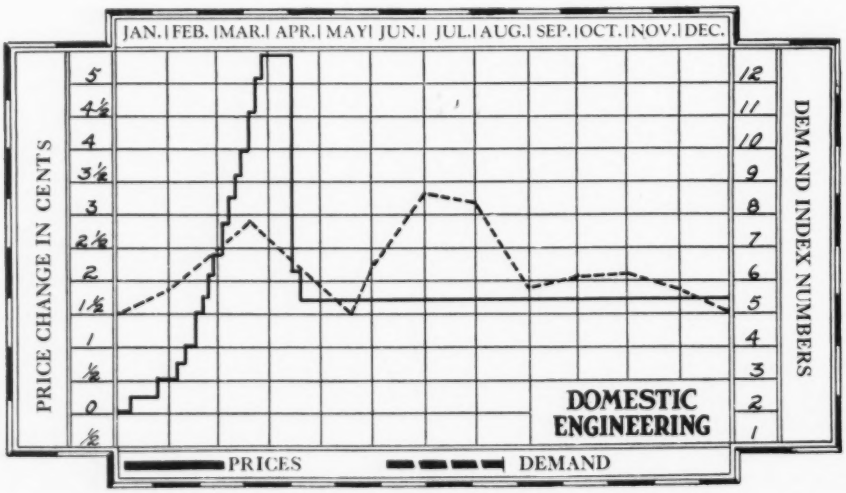
in producers' prices was also instrumental in causing wholesalers to anticipate their future needs and makers booked a nice volume at this time. From then until the end of the year most of the buying done by distributors was of the small-lot variety. Stocks at factories were well maintained at all times and quick deliveries were the general rule. In most cases jobbers are entering 1930 with only average stocks.



Brass Pipe Demand Was Good

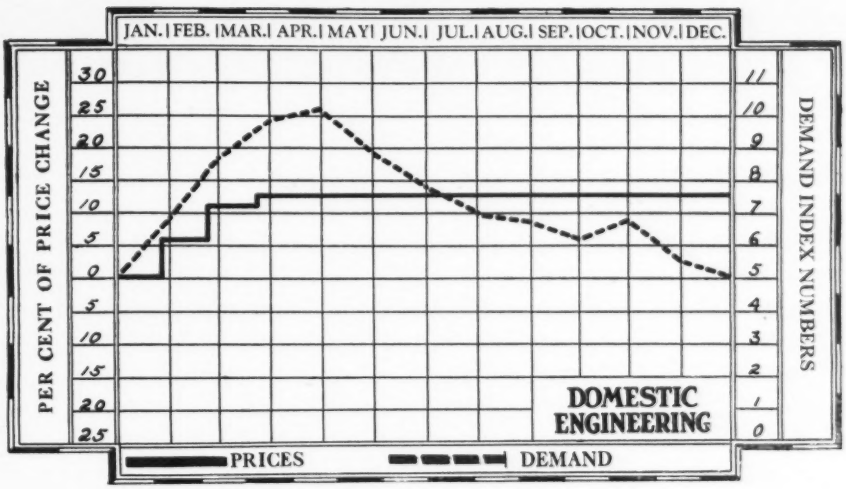
BRASS pipe, according to most reports, enjoyed close to the same demand in 1929 as was experienced in the previous year. In some instances gains were recorded. During January, February and March, price advances were announced by makers in rapid fire order. In March seven advances totaling three and three-quarters cents a pound were recorded and each resulted in shaking out commitments that totaled enough brass pipe to put the year up to that time ahead of 1928. Along in March, however, jobbers were not experiencing a heavy demand, with the result that shipments from makers slowed down and distributors became impassive to price advances. With the settling of the copper market in April, during which month two declines totaling three and three-quarters cents were announced, prices did not change from that point.

The "demand" line on the chart is created from information secured for the regular market reports, as definite statistics concerning the movement of this commodity are not available. The "price" line gives a general idea of the trend of prices during the year and, while all manufacturers did not change their prices on exactly the same dates, the line nevertheless shows how prices changed during the first four months.



Plumbers' Brass Goods Had Fair Year

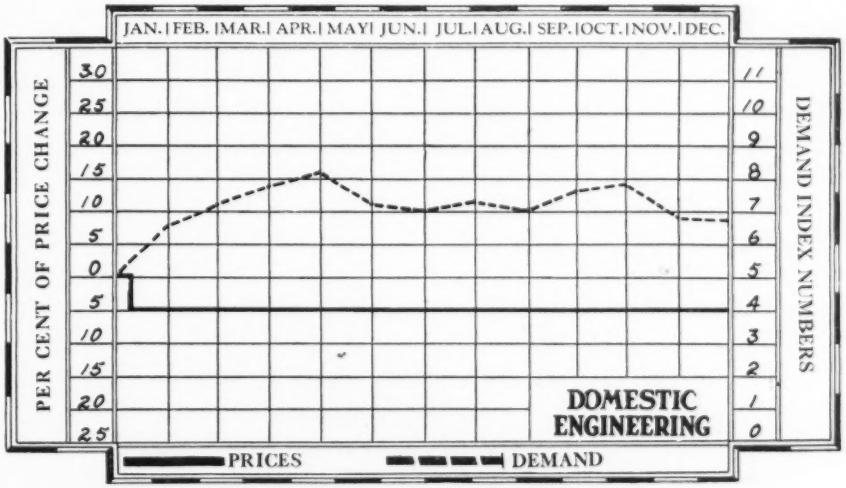
THE year opened with a rising tide of quotations on copper and the first quarter was punctuated with several new price sheets by manufacturers of cast and tubular brass goods. Wholesalers, as a group, purchased freely during this period to cover their next several months' needs and granted makers' salesmen a good inception for their yearly volumes. No further price changes were announced during the remainder of the year and, with job-


JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.
PER CENT OF PRICE CHANGE
30 25 20 15 10 5 0 5 10 15 20 25
DEMAND INDEX NUMBERS
11 10 9 8 7 6 5 4 3 2 1 0
DOMESTIC ENGINEERING
PRICES
DEMAND

bers generally in possession of good stocks, competition for the small-sized orders which distributors were placing became keen. Shipments from manufacturing points were usually made in good time.

The "demand" line is a composite of both cast and tubular brass goods and gives a rather clear idea of the movement of these items during the year, being based on information gathered for the regular "Domestic Engineering" market reports. The price situation in plumbers' brass goods makes it almost impossible to show on a chart the exact trend, as there are so many items affected in various ways when new price sheets are issued. While no attempt has been made to follow the price changes of every manufacturer in the "price" line on the chart, this line does give a fairly good idea of the general trend of cast and tubular goods.

Wrought Iron Pipe Moved Favorably


JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.
PER CENT OF PRICE CHANGE
30 25 20 15 10 5 0 5 10 15 20 25
DEMAND INDEX NUMBERS
11 10 9 8 7 6 5 4 3 2 1 0
DOMESTIC ENGINEERING
PRICES
DEMAND

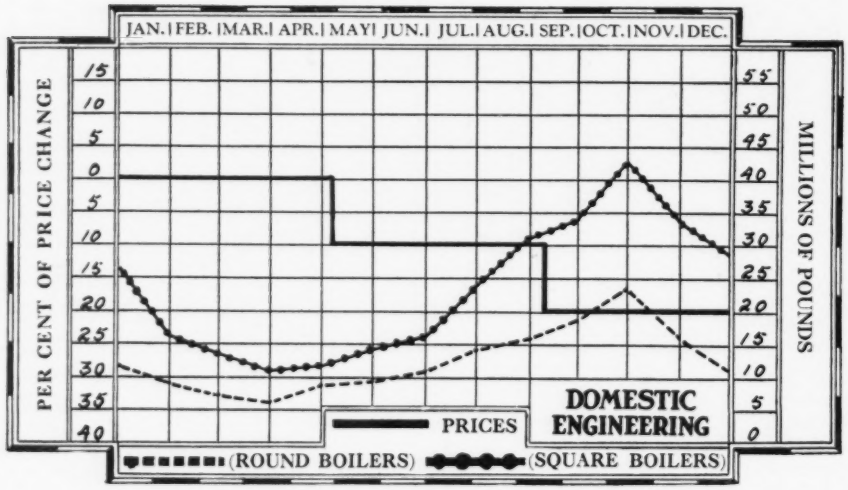
THE "demand" line on the accompanying chart indicates as clearly as possible, without definite figures being available, the movement of wrought iron pipe into the plumbing and heating field during 1929. The line is based upon data gathered for the regular market reports. While shipments from manufacturing points did not reach exceptionally high levels at any particular period of the year, there was, nevertheless, a steady output which at the close of the year aggregated satisfactory sales records. Reports indicate that most mills experienced their best business in the early spring, and the early fall also accounted for a substantial tonnage. At no time during the year did distributors show any inclination toward building stocks and close range buying was the general practice. Mill shipments were at all times prompt.

Mill prices on wrought iron pipe were changed on January 2, this being the first change in mill basing cards since early in 1923. The new cards embodied several regroupings of sizes together with a number of price readjustments. The latter embraced reductions, which, while varying on the different sizes, averaged in the neighborhood of 5 per cent. At a later date mills issued cards to their distributors, indicating a suggested minimum resale price for wrought iron pipe.

Demand upon distributors by master plumbers was light during the early part of the year, but by April pipe was moving from mills at a good pace. May witnessed a slight falling-off in some sections and for the balance of the year contractor requirements held at a fairly steady pace.

Boiler and Radiator Tonnage Was Lighter

Cast Iron Boiler Shipments

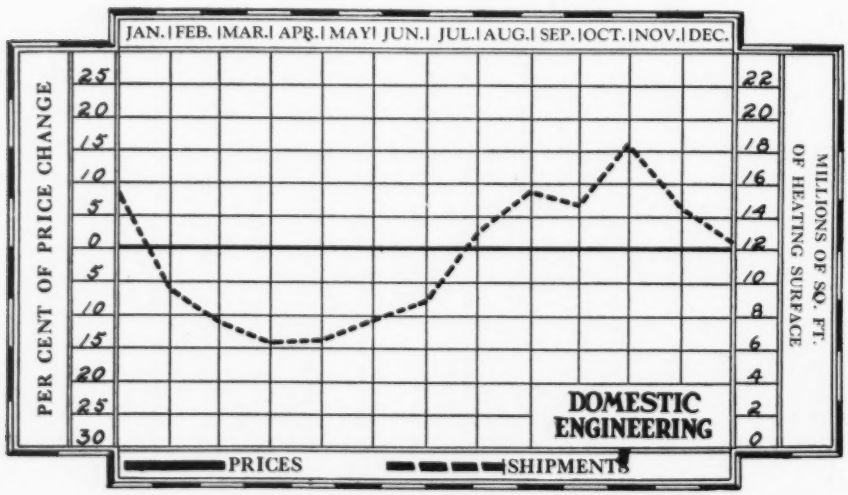

JAN. | FEB. | MAR. | APR. | MAY | JUN. | JUL. | AUG. | SEP. | OCT. | NOV. | DEC.
PER CENT OF PRICE CHANGE
15 10 5 0 5 10 15 20 25 30 35 40
MILLIONS OF POUNDS
55 50 45 40 35 30 25 20 15 10 5 0
PRICES
DOMESTIC ENGINEERING
(ROUND BOILERS)
(SQUARE BOILERS)

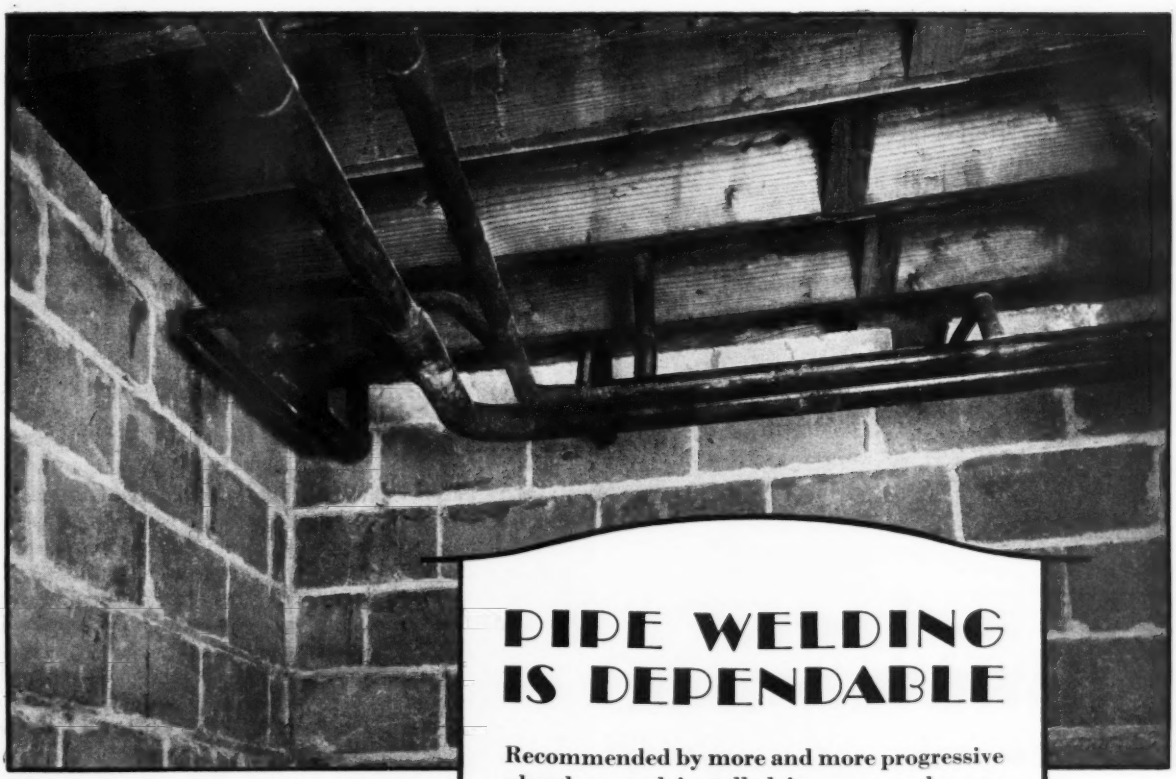
THE year 1929 was not as good in a volume way for the boiler and radiator industry as 1928. The "shipment" lines on the two charts on this page covering these products are based on figures secured each month from the department of commerce and show the movement of round boilers, square boilers and radiators for the first ten months of the year. November and December have been estimated as statistics for these two months had not been completed at the time of going to press. Shipments from manufacturing points were slow through January, February and March. With the arrival of April business picked up somewhat and continued to gain each month, reaching its peak in October. In each of the first ten months of 1929 shipments of square boilers and radiators were below those for the corresponding month of the previous year. The same condition applied to round boilers for the first six months of the year, but July, August, September and October showed slight gains over the same months in 1928.

The index numbers on the right hand side of the boiler chart designate shipments in millions of pounds, and on the radiator chart in millions of square feet of heating surface. The numbers on the left indicate the per cent of price change, zero representing the prices in effect when the year opened. The "price" line on the radiator chart is straight, as at no time during the year did makers change their base prices on radiation.

About May 6 manufacturers lowered their published prices on round boilers about 10 per cent. Then, around the first of July, practically all boiler and radiator manufacturers withdrew their old prices, discounts, quotations and selling arrangements and mailed new sheets to their customers. The next price change occurred about the middle of September, when makers' asking prices on the smaller sizes of round and square boilers were lowered approximately 10 per cent.

Radiator Shipments


JAN. | FEB. | MAR. | APR. | MAY | JUN. | JUL. | AUG. | SEP. | OCT. | NOV. | DEC.
PER CENT OF PRICE CHANGE
25 20 15 10 5 0 5 10 15 20 25 30
MILLIONS OF SQ. FT. OF HEATING SURFACE
22 20 18 16 14 12 10 8 6 4 2 0
DOMESTIC ENGINEERING
PRICES
SHIPMENTS



PIPE WELDING IS DEPENDABLE

Recommended by more and more progressive plumbers and installed in more and more modern homes, welded piping is daily demonstrating its dependability after years of service.

Unusual economy and flexibility of installation are possible because pipe may be rapidly cut to size on the job and quickly welded into place with the Airco-Davis-Bournonville Welding Torch and Cutting Attachment supplied with Airco high purity Oxygen and Acetylene in portable cylinders.

Ask the nearest Airco Office, listed below, for further information

Drop in at our Exhibit at the International Heating and Ventilating Engineers Convention, Philadelphia, January 27 to 31. Booths numbers 603 and 604.

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Seattle
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St. Louis
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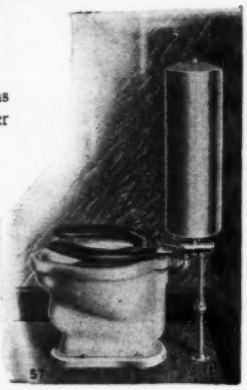
Airco Oxygen—Airco Acetylene—Airco-Davis-Bournonville Welding and Cutting Apparatus—Supplies—Airco National Carbide

They may forget-but a Jewel doesn't



THE fact that rough usage means nothing to Jewel Auto Pneu Matic Water Closets makes it easier for you to sell them. They serve their purpose reliably and economically! But there is another vital reason why so many Plumbing contractors make no mistake in handling Jewel Closets—they are self-operating. This point alone makes their recommendation safe—and their ideal adaptability to industrial plants, schools, public and private buildings of every description makes them profitable to you!

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The BOWLUS MFG. CO., Springfield, O.

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Just what its name implies

The slightly different shape of the Leader Float was recently perfected to give greater sturdiness and rigidity. The spud has greater solidity and will never crack, wear or break.

A rubber washer joint, more expansive, allows for expansion and contraction in all Reichert made floats. They stay tight!

Reichert made floats from your jobber.

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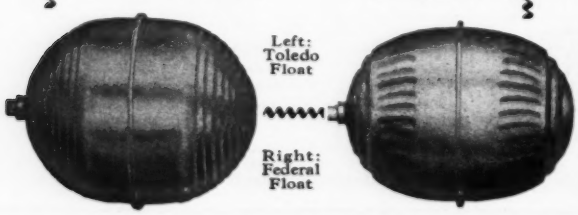

Left: Toledo Float

Right: Federal Float

Philadelphia Development League Presents Merchandising Playlet

A playlet depicting merchandising was presented before a large audience of master plumbers by the Plumbing and Heating Development League of Philadelphia, Pa., on December 20, in the Public Ledger building in that city. The play, in the form of a sales demonstration, was divided into two parts; the first, an interior of a plumbing shop, portrayed a salesman for a wholesale house selling a master plumber, while the second had the scene laid in the living room of the home of a woman prospect to whom a plumbing contractor was heard selling a kitchen sink, with Dr. John R. Whitaker of the University of Pennsylvania as the critic. H. L. Stilwell portrayed his own role of master plumber in both instances, while M. Amelia of Crane Co., Philadelphia branch, gave his version of how a jobber's salesman should sell his company's merchandise.

Mr. Amelia, calling on Mr. Stilwell, concentrated his sales efforts on new designs in acid resisting enameled iron drainboard sinks, a chromium finished swing spout faucet, and a four-inch enameled shelf.

After describing fully the features of this kitchen equipment and the appeal which it holds for women, Mr. Amelia was told by Mr. Stilwell that his employes were all mechanics and not salesmen. The salesman countered with the suggestion that Mr. Stilwell himself could, with little effort, successfully sell these new products. Agreeing to try selling some of the merchandise, he placed an order. In analyzing the sales discussion Dr. Whitaker said that while the salesman was convincing in his talk, the buyer was too easily sold.

The next scene opened in the evening with Mr. Stilwell in the home of Mrs. F. J. O'Brien, a prospective customer, trying to carry out effectively the salesman's suggestions. He opened his sales talk by calling Mrs. O'Brien's attention to the shabbiness of her sink and faucets, which had seen a number of years' service. He also spoke of similar former equipment in his own home; how in places the acids of fruits had eaten through the enamel, causing it to be discolored permanently, and how thrilled his wife was when he replaced the sink with an acid resisting one such as he was now offering for sale.

Mrs. O'Brien admitted she would like to have a new sink but raised the objection that Christmas had made severe demands on her pocketbook. Mr. Stilwell replied that he would install the sink, with the chromium swing spout faucet, and accept deferred payments, just as is done in the case of an automobile, a radio, or any commodity which might be purchased from the gas or electric company. He finally consummated the sale of the sink.

In commenting on Mr. Stilwell's sales talk afterward, Dr. Whitaker said that it was about as nearly a perfect sales demonstration as could be given. Listing the factors in successful selling, the Doctor indicated that approach is of first importance. A prospect's attention must be gained, his first impression good, his curiosity aroused, and he must be made to consider the proposition seriously. He then listed in sequence the requisites for an effective demonstration, as, imagination, inclination, deliberation, recapitulation, decision, suggestion, action and conclusion.

President M. J. Feeney, speaking on credits, expressed the opinion that supply houses, in many instances, are too lenient with the master plumber in this direction, thus permitting him, in turn, to allow his customers too much time in meeting obligations. This statement came from President Feeney after a discussion of the subject was given by J. M. Brown of Hajoca Corp., Philadelphia.

Howard S. Thrasher of the league staff, speaking on cost finding, overhead and profits, stressed the need of an adequate bookkeeping system to make a business profitable.

◆

Colonel Archer Leaves Bureau

The board of directors of the Plumbing and Heating Industries Bureau announces that, because of a lack of funds, it has been found necessary to make retrenchments in the bureau's activities and it will have to sacrifice the services of Colonel W. G. Archer.

The board made it clear, in announcing its inability to continue the work which Colonel Archer has been doing, that this is no reflection on the importance of the work or the ability of Colonel Archer. The members of the board hope that it will soon be possible to resume the important work that Colonel Archer has performed so efficiently and which has changed the attitude of the public toward the master plumber, and directed attention to the advantages of modern plumbing and heating systems.

Col. W. G. Archer

Colonel Archer has for years been one of the most popular men in the industry. He has an unusual background of information combined with genuine enthusiasm for his subject. During the eight years that he has been associated with the bureau, he has delivered almost 1,900 lectures on various phases of plumbing and heating as it affects public welfare. For two and a half years Colonel Archer, as military advisor to King Feisal of Arabia, had an unusual opportunity to study the evolution of the ideas of sanitation in the Near East, the cradle of the race.

Through association publications and the trade press, Colonel Archer wishes to express his personal regret in the severance of his relations with the plumbing and heating industries. "I have learned to love many men in all branches of the industries with whom I have come in contact during my eight years with the bureau," Colonel Archer said in a recent letter.

◆

Death of William B. Penfield

William B. Penfield, master plumber of Cooperstown, N. Y., died recently in that city after a six months' illness. Mr. Penfield was born in New York City and moved to Cooperstown 22 years ago, where he has been engaged in the plumbing and heating business for the last seven years.

Styles "C"—"H"—"R"

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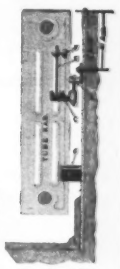
For Wall and Tube Type Radiators

Now E-Z Hangers ideally meet your requirements for hung radiation, both wall and tube type. Installations easily made at minimum expense, and every job clean, sanitary, entirely satisfactory

Fully adjustable, horizontally and vertically. Hanger out of sight. No obstruction back of radiator. No need for accurate measurements of anchor bolts. Adapted to any wall material. Recommended by architects and contractors.



Style "C"

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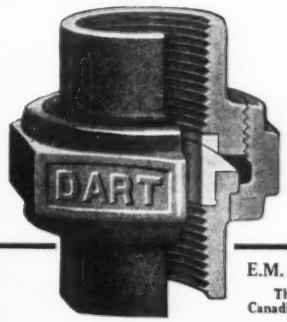
DART UNIONS



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STACK RED METAL Ball Cocks

Here is an absolutely noiseless ball cock with a removable seat.

Will operate efficiently on high or low pressure with no change of float or seat.

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BALL COCKS
INDIRECT HEATERS
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When Everything Else Has Failed Try Overton!

½ PITCH

After you've decided that a lot of time spent on the roof takes a lot of the profit from the job and after you've searched for a flashing that'll go on in a few minutes, ask your jobber to send you an Overton. It'll be a revelation in roof flashing manufacture for you.

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Woman's Page

There are many ways in which women have been instrumental in securing improved sanitary conditions in their towns. One of these ways is the securing of rest rooms conveniently located in the central district of the town. It has been found that women from the rural districts, who come into town to do their shopping, are especially appreciative of these rooms. In Bismarck, So. Dak., the rest room, which is equipped with up-to-date sanitary facilities, has been supplied with baby beds, cribs and cots in abundance. Playthings are also furnished to amuse the children while their mothers are shopping. A matron is in charge of the room, and at times as many as sixty or seventy children are cared for.

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Interesting Program Planned for Convention of Wisconsin Auxiliary

The Ladies Auxiliary of the Wisconsin Master Plumbers' Association will hold its first annual convention in Milwaukee on January 14, 15, and 16, in connection with the regular sessions of the state master plumbers' meeting.

Mrs. Otto Waskow, president of the Milwaukee Women's Auxiliary, will give the address of welcome when the association convenes on Tuesday at 2 P. M., following which announcements of committees will be made, resolutions will be introduced, officers will be nominated and memorial rites for departed members will be held. The meeting will take place at the Schroeder Hotel.

On Wednesday a luncheon will be given at the Elks' Club for the ladies at 12:45 P. M. and Thursday a tour through Roundy, Peckham & Dexter Company, wholesale grocers, has been arranged. The ladies will assemble at the Schroeder hotel on Thursday at 10 A. M. sharp, from where they will be taken on the tour through the grocery concern.

On Thursday evening the ladies will join their husbands at the annual dinner-dance and entertainment feature scheduled to take place in the Crystal Ballroom of the Hotel Schroeder.

As this is the first state convention the ladies have had they are especially desirous of making it a success, and the Milwaukee members of the auxiliary are enthusiastically working to promote the event.

South Side Auxiliary Gives Luncheon

Mesdames C. A. Bolton, J. J. Calnan, John Cepican, B. C. Klein and P. D. Parsons of the Women's Auxiliary to the South Side Master Plumbers Association entertained thirty-six members at the Broadview hotel, Chicago, on Wednesday, December 4. A delicious luncheon was prepared by Mrs. Simmons which was thoroughly enjoyed by all those present.

The regular business meeting then took place and at

A Message to the Auxiliaries

By Mrs. Charles Pelunek, of Milwaukee, president of the Women's Auxiliary to the Wisconsin Master Plumbers' Association.

As the date for the Wisconsin convention approaches, we are reminded that we will soon have completed a year of existence as a state auxiliary. The occasion of the convention (January 14, 15 and 16) will mark our first anniversary as a state organization. Although the state auxiliary is comparatively new, several of the local auxiliaries have been organized for some time, and the co-operation which has always been manifested between the master plumbers of the state and the members of the women's auxiliaries is a source of gratification to all. I am depending on the enthusiasm and loyalty of all our members to insure a large attendance at the convention.

that time it was voted to make the regular Christmas donation. Mrs. Watson was chairman of a committee whose purpose was to help a needy family.

Mrs. Ritter appointed a nominating committee with Mrs. Haig as chairman, Mrs. Quinlan, Mrs. McHugh, Mrs. Parsons and Mrs. Smith supporting her. A report will be made by the committee at the next meeting.

Mrs. Feldkamp, who has been quite ill for several months, is reported to be making fairly good progress and on the road to recovery.

A most pleasant afternoon at cards was enjoyed following the business session and high score at bridge was won by Mrs. McGinnis, a guest of Mrs. Khym, Mrs. Kratz and Mrs. Jacobs. Mrs. Myers held the high score in the game of five hundred.

Attendance at Conventions of Illinois Auxiliary Increases Each Year

Mrs. H. H. Diedesch, president of the Illinois Women's Auxiliary, wishes to call the attention of members of the state organization to the interesting and important sessions of the women's auxiliary which will be held at the time of the state convention, January 21, 22 and 23. She urges wives, mothers and daughters of master plumbers to attend if they possibly can. It is worthy of note that the attendance of women at the Illinois auxiliary conventions has increased in about the same proportion as that of the men. In 1927 there were 97 women attending the convention at Springfield; in 1928, there were 124 women at the convention at Moline, while in 1929 there were 148 women attending the convention at Peoria. It is confidently expected that this year's attendance at Rockford will show a corresponding increase over the attendance at last year's convention.

Schenectady Auxiliary Holds Meeting

The December meeting of the Schenectady, N. Y., Woman's Auxiliary was held at the home of their president, Mrs. T. J. Sims. There were fifteen members present and one new member was enrolled. Plans for providing a basket of food and toys for the children of some needy family were made. After the business session, the ladies enjoyed a delicious luncheon in honor of Mrs. C. Roony, who was just recently married. The auxiliary presented the bride with a walnut magazine rack. The next meeting will be held in January at the home of Mrs. C. Frank.

Auxiliary Organized at Pampa, Texas

A number of ladies from Amarillo, Tex., motored to Pampa, which is located about 60 miles away, to help organize an auxiliary at that city on November 30. A very interesting meeting was held although there were few eligible members at Pampa. Mrs. L. H. Sullins was elected president and Mrs. J. W. Minnis, secretary and treasurer. Mrs. Roy Burke, state secretary, presided at the meeting in the absence of the state president. Mrs. J. W. Minnis and Mrs. L. H. Sullins entertained the visiting women with a dinner after the business meeting had been concluded.

Alameda County Auxiliary Elects Officers

When the ladies of the Alameda County Auxiliary gathered in Oakland December 7 for their last meeting of the year, the following officers were chosen for 1930: president, Mrs. R. Spiersch (incumbent); vice president, Mrs. W. D. J. Evans; secretary, Mrs. L. J. Bryant; treasurer, Mrs. Lester Jackson; and marshal, Mrs. Harry LaGassick. A delicious luncheon was served, and following the election of officers the ladies enjoyed several rounds of whist. One of the traditions of this auxiliary unit is the observ-

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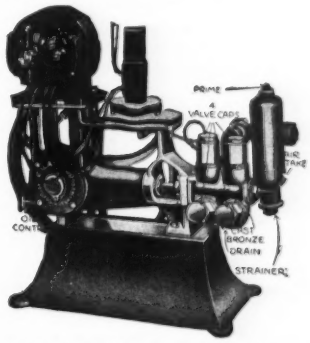

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Why They're Health-Safe

It's not just an accident—this assured sanitation that Halsey Taylor fountains give. It's the practical, automatic stream control and two-stream projector — patented features that mean maximum health-safety and drinking convenience, to say nothing of freedom from servicing!

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illustrated herewith, a popular-priced vitreous china wall type with all exposed fittings chromium plated—and all the exclusive Taylor selling features, of course!

ance of ceremonies attending the installation of officers, and the next occasion will be no exception. Elaborate plans are already under way for the ceremony which is scheduled for January 20th.

Lawrence Auxiliary Holds Meeting

The Women's Auxiliary of Lawrence, Kans., held its regular monthly meeting on Tuesday evening, January 7. The meeting was called to order at 7:45 p. m. The subject of the roll call was "Electric Refrigeration Receipts." Reports were read by the secretary and treasurer, and other business was transacted. Mrs. A. T. Olson was leader for the evening. A social hour followed the general discussion. Mrs. Vic Olson was hostess.

North Hudson Auxiliary Gives Christmas Party

The Women's Auxiliary of the Master Plumbers' Association of North Hudson, N. J., held its seventh annual Christmas party on December 27 in the Capitol Banquet Hall, Union City, N. J. A number of children were on hand to receive candy, fruit and toys from Santa Claus. Joseph Syfel assumed the role of the dispenser of joy for children and each toy bore the name of the child for whom it was intended. This was a source of great mystery to the little folks, as it was impossible for them to figure out how Santa knew each one by name. Madalene Markle, the little daughter of N. Markle, gave an exhibition of toe dancing, while Ethel Rover sang and offered some tap-dances. Elizabeth Rover supplied the piano accompaniment. A large Christmas tree was set in the center of the hall and with all lights out except those on the tree, Santa made his appearance to the strain of "Jingle Bells." Ice cream, cake and coffee were served to children and grown-ups.

Yule Spirit Abounds at Oakland Party

The true spirit of Christmas was in evidence at Plumbers' Hall, Oakland, Calif., on the evening of December 16, when the ladies' auxiliary of the Alameda County Master Plumbers' Association were hosts at a Yule party which numbered close to 150. The children took part in a delightful program including recitations and vocal and instrumental numbers, and appeared to enjoy it as much as their elders.

Following the address of welcome by Mrs. J. W. Rankin, "the Durant trio," made up of Lois, Mildred and Donald Durant, on the piano, violin and flute, rendered two selections. Walter Grey scored a hit with "Greedy Jim," as did Shirley Picard in her piano solo. Equally entertaining was diminutive Nita Johnson's recitation, Randolph Newman's solo, the recitation by Helen Collins, the

Left to right: Mrs. Louis Leon, Bronx; Mrs. William Metcalf, Rockville Center; Mrs. Charles W. Kirchhof, Bronx. Photo taken at the outing of the Bronx Master Plumbers' Association

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There is no doubt about the merchandising opportunities offered by ***C & S*** Shower Doors. Hundreds of Contractors have displayed them in their showrooms to excellent profit advantages.

C&S Doors are furnished in either Chromium or Nickel Finish, have the highest quality french plate glass and are built sturdily enough to withstand years of the hardest usage.

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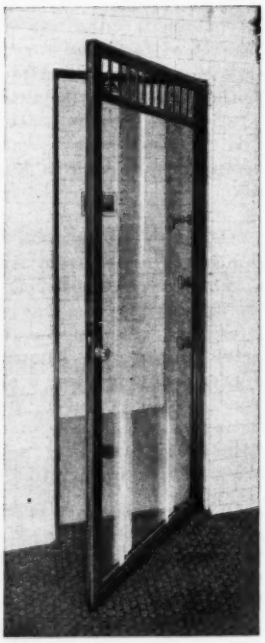

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piano solo by Billy Picard, a recitation by Mary Jackson, and a Christmas acrostic by nine of the smaller children. "The Night After Christmas," by Mrs. W. D. J. Evans, added a delightful touch of comedy to the program. As Santa Claus, George Stoddard was there with bells on, his generous pack yielding scores of gifts for the little ones. When the last toy was handed out, the masters and their wives took places at the beautifully decorated table in the banquet room where a delicious supper was served, while the kiddies enjoyed ice cream and cake in front of the gaily lighted tree. The committee in charge of arrangements was made up of Mrs. J. W. Rankin, chairman, assisted by Mesdames Lola Zeis, W. D. J. Evans, J. Rankin, Harry LaGassick and Lester Jackson.

Rock Island-Moline Auxiliary Has Busy Social Season

The Women's Auxiliary of Rock Island-Moline, Ill., has held several interesting affairs lately. One was the celebration of its second anniversary, on which occasion the entire membership turned out for a luncheon at the Elks' Club, Rock Island. The master plumbers' associations of Rock Island and Moline presented the ladies with American beauty roses, and these were used to good effect in the table decorations. Mrs. Rosenfield, president of the auxiliary, gave a brief talk in which she outlined the work of the auxiliary. After luncheon, a theater party was held at the Fort Armstrong theater. Other meetings recently held were those at the Peacock Inn, Rock Island, with Mrs. J. W. Ward as hostess, and at the Y. W. C. A., Moline, with Mrs. Charles Stange as hostess.

Tulsa Auxiliary Entertains Master Plumbers

The Women's Auxiliary of Tulsa, Okla., recently held a most enjoyable party when the members of the master plumbers' association and other invited guests were entertained at the Postal Employees' Club House. Bridge and other games were played by those attending, and honors went to Mrs. E. L. Freeman, Miss Horrie, J. H. Carnahan and W. S. O'Brien. After the games, the ladies served refreshments. Among those present were: Mr. and Mrs. E. L. Freeman, Mr. and Mrs. L. M. Megee, Mr. and Mrs. N. G. Watt, Mr. and Mrs. H. O. Green, Mr. and Mrs. J. H. Carnahan, Mr. and Mrs. Harry Mason, Mr. and Mrs. Roy McCaskey, Mr. and Mrs. H. L. Ellison, Mr. and Mrs. Benson, Mr. and Mrs. D. R. Lynch, Mr. and Mrs. V. D. Fowler, Miss Horrie, L. Huddleson, H. M. Wherry, W. O. Heizer, W. S. O'Brien, George Derrick and W. Senseman.

Mrs. E. D. Fishback of Bartlesville, Mrs. W. F. Black of Enid, secretary and president of Oklahoma Women's Auxiliary. Photos taken at the convention of the Oklahoma State Women's Auxiliary

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This line of heaters supplements York Heat-Diffusing Units, the original floor intake, blower type Units, used today on a scale that has made York the largest manufacturer of Unit Heaters.

The same engineering skill, the same experience of many years, the same manufacturing facilities, are behind Kroy Units as are behind Heat-Diffusing Units. Leadership is held by giving you more for your money —more heat, more service—more reliability.

Complete information will be gladly sent without obligation.

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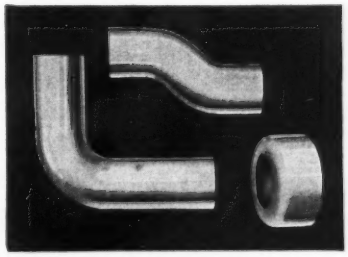
Manufacturers of Heat-Diffusing Units, Air-Conditioning Units, Air-Cooling Units, Kroy Unit Heaters and Super-Fin Blast Radiation Coils.



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It eliminates human fallibility and makes temperature control a mechanical certainty.

The Sarco is entirely self-contained and needs no outside attachment or operating medium such as electricity, compressed air or water pressure.

So simple and composed of so few parts that there's no danger of it getting out of order.

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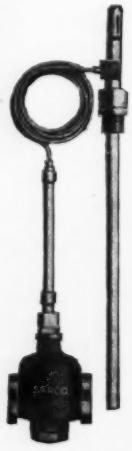

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New Business Ventures

West New York, N. J.—The Fairview Plumbing and Heating Co. has been organized and incorporated, with a capital of $125,000, to establish and operate a plumbing and heating contracting and engineering business.

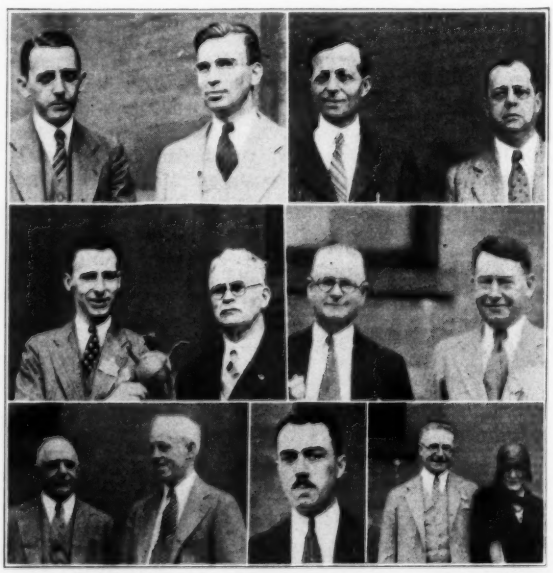
Islip, L. I.—The Islip Plumbing Co. has been chartered under the New York laws, with a capital of 100 shares of no par common stock. It is planned to take over and continue the operation of a plumbing contracting and engineering business in Islip formerly conducted as a partnership of the same name. F. W. Tuck, Jr., local attorney, represents the new firm.

Brooklyn, N. Y.—The Gordon Plumbing and Heating Supply Co. has been organized and incorporated, with a capital of $6,000, to establish and operate a plumbing and heating contracting business. L. Rosenberg, 1440 Broadway, New York City, represents the concern.

New York, N. Y.—The Penn Contracting Co., recently organized and incorporated, with a capital of $20,000, will specialize in the plumbing contracting and engineering business. Temporary headquarters are in care of H. Dickman, 151 West Fortieth street.

Akron, Ohio—The Superior Heating and Plumbing Co. has been organized to engage in the plumbing and heating contracting business, by Benjamin S. Aberman, E. Milton Ulmer and Frances Purdy.

Berwyn, Ill.—The E. L. Hardin Plumbing Co., 6510 West 34th street, has been organized and incorporated with a capital of $10,000, to carry on a plumbing contracting business, by E. L. Hardin, John Swade and Roy I. Hardin. The new firm is represented by Edmund P. Kelly, 100 West Monroe, Chicago.



Top row: W. E. Karcher and John O. Anderson, both of Jones & Laughlin Steel Corp., Pittsburgh, Pa.; H. T. Caswell and C. A. Peck, both of J. L. Mott Co., Inc., Trenton, N. J. Middle row: N. K. Hale and J. W. Gannon, both of "X" Laboratories, New York City; W. J. Scannell, Kansas City, Mo.; H. F. Hare of the Chandler Pump & Supply Co., Kansas City, Mo. Bottom row: J. J. Crotty of Central Foundry Co., New York City; T. M. Dugan of National Tube Co., Pittsburgh, Pa.; Joseph A. Fahy of Wilson Sanitation, Inc., Buffalo, N. Y.; V. J. Duffy of New York City, secretary of New York state association, and Mrs. Duffy. Photos taken at the Buffalo convention, N. A. M. P.

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IT'S AUTOMATIC

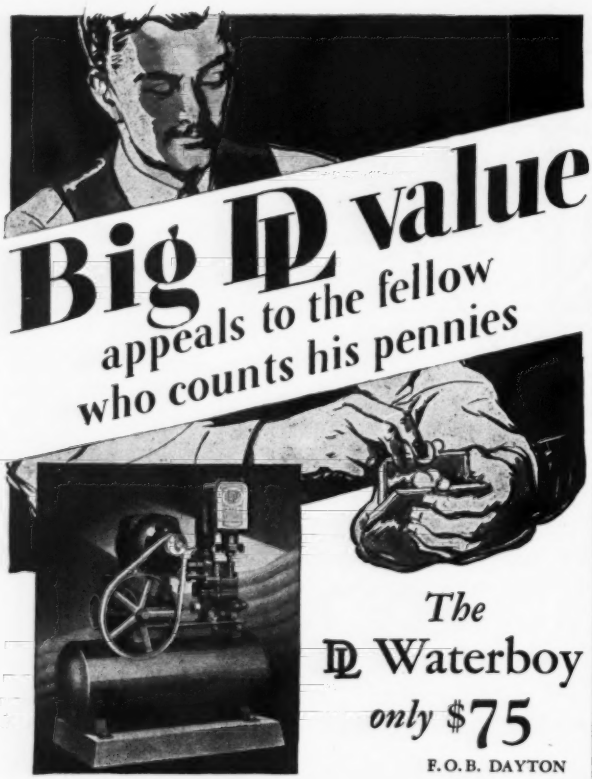
TO ALL those who have so wholeheartedly accepted Cash Acme valve products, and thus contributed to the unique growth and success of this company, we express our sincere appreciation. With renewed energy we enter the new year confident that past pleasant relations will be reflected in future mutual prosperity.

May 1930 bring you an abundance of Health, Wealth and Happiness. Happy New Year!

A. W. CASH VALVE MFG. CORP.

DECATUR, ILLINOIS

President



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Thousands of other plumbers are doing it with the DL Waterboy. This famous water system is a double-barreled money-maker. It's priced so low it appeals to the fellow who counts his pennies. Yet it's built so well that the quality-buyer is a red-hot prospect too.

Don't confuse the Waterboy with the regular run of water pumps. It has been approved by General Motors engineers. It's built to last for years. It starts itself, stops itself, runs itself and delivers 225 gallons of water per hour if you need it. Easy to sell, easy to install, it's just the kind of water system that every plumber likes to handle. *And it's only $75 f.o.b., Dayton—complete with 5 gallon pressure tank!* And the Waterboy is only one of a complete line of DL Water Systems for deep and shallow wells.

If you're interested in a bigger income, mail coupon today for full details of liberal profit-sharing plan.

DL ELECTRIC WATER SYSTEMS

PRODUCT OF GENERAL MOTORS
"*The* GOLD STANDARD *of Quality*"

Also Manufacturers of Delco-Light Electric Plants and Delcogas for Household and Commercial Use

DELCO-LIGHT COMPANY, *Subsidiary of General Motors Corporation*, Dept. Q-131, Dayton, Ohio.
Show me how I can build up my business and increase my profits with DL Water Systems. Sending for the facts does not obligate me in any way.
Name.....
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9-63

Portland, Ore.—D. F. Simpson has engaged in business under the name of Simpson Heating Co.

Perth Amboy, N. J.—The Amboy Heating Co. has been organized and incorporated, with a capital of $125,000. It is planned to establish and operate a heating contracting and engineering business. The firm of Dubrow and Sellyei, Perth Amboy, represents the new company.

San Francisco, Calif.—Harry H. Lyon has engaged in the plumbing and heating business at 721 Gough street.

Memphis, Tenn.—J. J. Nolan & Co., Inc., has been organized and incorporated by J. J. Nolan and G. H. Wilson, to engage in the plumbing, heating and ventilating contracting business at 235 Court avenue.

Des Moines, Iowa—Edwin Cutler has sold his interest in the Cutler Plumbing Co., 413 5th avenue, and will operate a plumbing and heating contracting business at 770 9th street. He has appointed G. P. Combs, formerly with Crane Co. of Chicago, as manager of his new store.

Brooklyn, N. Y.—The Nuway Plumbing and Heating Corp. has been organized and incorporated, with a capital of $10,000, to establish and operate a plumbing and heating contracting business. Edelman and Pastor, 313 Roebling street, represent the new firm.

Hempstead, L. I.—Joseph Feeney and associates, have organized and incorporated the firm of Joseph Feeney, Inc., with a capital of $5,000, to establish and operate a plumbing contracting business. B. E. Burtson, local attorney, represents the new concern.

Chehalis, Wash.—F. P. Hicks has engaged in the plumbing and heating business at 979 Chehalis avenue.

Jamaica, Long Island.—The Warranty Plumbing and Heating Maintenance Corp. has been organized and incorporated, with a capital of $20,000, to establish and operate a plumbing and heating contracting business. Brownstein and Brownstein, local attorneys, represent the new concern.

New York, N. Y.—The Greenbow Plumbers, Inc., has been organized and incorporated, with a capital of $5,000, by A. L. and R. M. Greenbow. The new concern will establish and operate a plumbing contracting business in the Bronx. J. H. Katz, 391 East One Hundred Forty-ninth street, represents the company.

New York, N. Y.—The firm of McPhee and Schrieb has been organized and incorporated, with a capital of $20,000, to establish and operate a heating and plumbing contracting business. R. Wein, 1440 Broadway, represents the new concern.

New York, N. Y.—The Gotham Heating Co. has been organized and incorporated, with a capital of $15,000, to establish and operate a heating contracting and engineering business. Representing the new concern is H. Chaityn, 1501 Broadway.

New York, N. Y.—Carl Abrams, and associates, have organized and incorporated the firm of Carl Abrams, Inc., with a capital of $3,000, to establish and operate a heating and ventilating business in the Bronx. The new concern is represented by G. M. Bayles, 475 Fifth avenue, New York City.

New Haven, Conn.—The Carlona Co. has been organized and incorporated to engage in the heating and plumbing business with a capital of $50,000, by James German, R. J. Carlona and Victoria Carlona.

New London, Conn.—P. G. Mono & Co., Inc., has been chartered to conduct a plumbing and heating business with a capital of $50,000. The incorporators are P. G. Mono, H. V. Mono, Margaret Mono and Mary Mono, all of New London.

New Haven, Conn.—Fromkin & Fleishner, Inc., has been granted a state charter to engage in the plumbing and heating contracting business with a capital of $50,000. The incorporators are S. Fromkin, Herman Fleishner, Mae Fromkin and Betty Fleishner, all of New Haven.

Business Changes

Tyler, Tex.—The E. L. Wallace Plumbing and Heating Co., recently opened its new offices and showroom at 334 South College street, with an excellent display of modern plumbing and heating equipment.

Baker, Ore.—John J. Ackerman has moved his plumbing business to new quarters which he recently purchased. A part of the structure, which has been completely remodeled inside and out, is being used as a display room.

Des Moines, Iowa—The W. R. Daidson Plumbing and Heating Co. has established a plumbing and heating contracting business at 23rd street and University avenue.

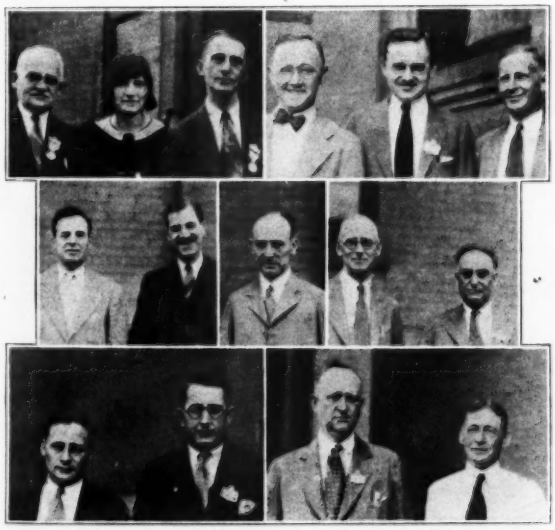
Mobridge, S. D.—H. G. Flom, who has for some time been engaged in the plumbing and heating business, has opened a hardware store on Main street, and will continue his plumbing business in the rear of the building.

Louisville, Ky.—The Crescent Plumbing and Heating Co., Inc., has removed from 927 West Jefferson street to 801 East Jefferson street.

San Francisco, Calif.—J. Shipman has moved his plumbing and heating business from 817 Sutter street to 306 Leavenworth street.

Detroit, Mich.—Echelmeir's, Inc., has succeeded to the plumbing and heating business of Echelmeir Bros., at 13151 Harper avenue.

Waterloo, Ia.—The Quest & Smith Plumbing shop was recently damaged by fire to the extent of $1,500.



Top row: B. Krieger of New York City; Mrs. L. Adler of Buffalo, N. Y.; G. W. Busch of Josam Mfg. Co., New York City; M. W. Lansing, P. R. Berryman and Lee Keller, all of Trenton Potteries Co., Trenton, N. J. Middle row: A. F. Bell of J. H. Williams Co., Buffalo, N. Y.; R. J. Shornhorst of Reading Iron Co., Reading, Pa.; J. J. Sheeran of Central Tube Co., New York City; Clint E. Beery and A. P. Hare, both of Kewanee Boiler Co., Kewanee, Ill. Bottom row: C. J. Cook and Harley Smith, both of United States Radiator Corp., Detroit, Mich.; F. M. Hess and F. W. Allison, both of Acme Refining Co., Cleveland, Ohio. Photos taken at Buffalo convention, N. A. M. P.

A FEW HOURS' WORK PAYS FOR IT

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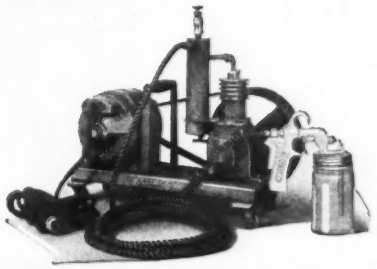
from then on—IT'S ALL PROFIT



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Weighs but 46 pounds, operates from the nearest light socket, driven by a ¼ horsepower motor . . . all the essentials for paint spraying are included. The suction feed spray gun gives perfect atomization without spattering.

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A Good-Will Builder—

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EVERY time you install a Globe Sizzler, you make another satisfied customer. This heating coil is a good will builder because it gives longer, more satisfactory service.

It has no pockets to lime up—an outstanding advantage found in no other coil. The Globe Coil alone provides circulation always in a horizontal or an upward direction. For that reason, it does not clog, but assures free and noiseless flow of water. It heats water *hot* in less time. The Globe Sizzler is a patented one-piece coil, rapidly being adopted by plumbing and heating dealers throughout the country. It is stocked by all leading plumbing and heating wholesalers. Write us or ask your jobber for details on the Globe Plan for making your furnace-coil business show you bigger profits.

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"I've sat up on the roof with one of these so-called roof flashings and cussed a blue streak when I tried to get it to fit and then someone mentioned Hessler Roof Flashings to me.

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More than one plumber will tell you something similar to the above.

Ask Your Jobber

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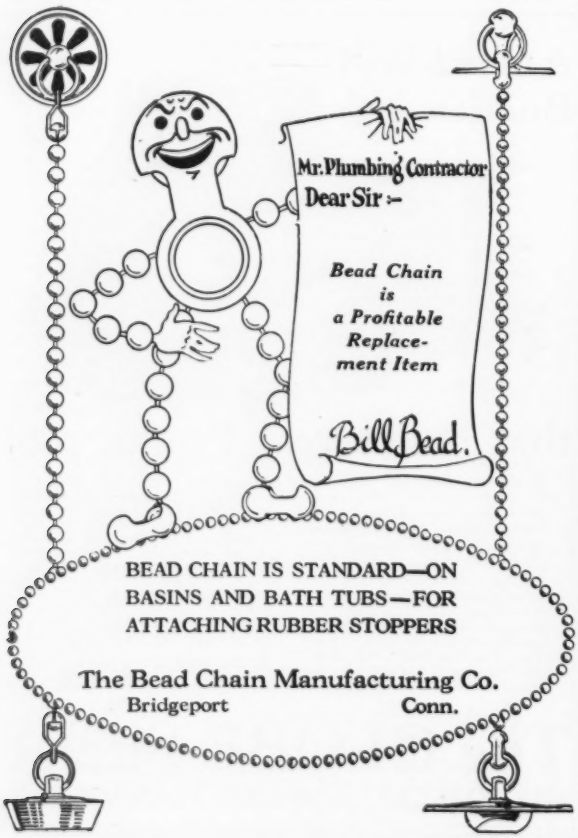
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Dear Sir:-
Bead Chain is a Profitable Replacement Item
Bill Bead.
BEAD CHAIN IS STANDARD—ON BASINS AND BATH TUBS—FOR ATTACHING RUBBER STOPPERS
The Bead Chain Manufacturing Co.
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New Trade Literature

Catalog of Stockham Pipe & Fittings Co.

The Stockham Pipe & Fittings Co., of Birmingham, Ala., has just published its Catalog H, for 1929. This catalog contains 359 pages of vest pocket size, bound in brown cover with gold lettering. One section is devoted to cast iron fittings, such as standard screwed, extra heavy screwed, flange unions, bushings, plugs, drainage fittings, sprinkler fittings, standard flanges, extra heavy flanges, standard flanged fittings, and extra heavy flanged fittings. Another part is devoted to malleable fittings, including standard, extra heavy, oil malleable, heavy oil malleable, hydraulic, ground joint unions and face bushings. Under the head of steel fittings are listed screwed and flanged fittings and flanges. The catalog contains also many data which aid in estimating the fittings for any job.

Booklets of National Radiator Corp.

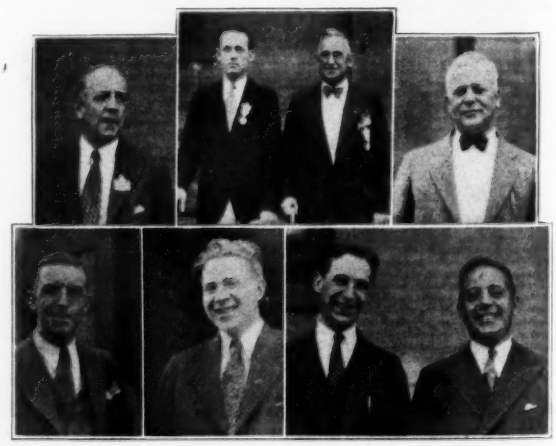
National Radiator Corp., of Johnstown, Pa., has recently published several pieces of literature concerning its products. One folder describes a jacketed boiler for homes and small buildings. This boiler, it is stated, burns hard or soft coal, coke, oil or gas. A list of outstanding points is given. A small folder with the caption, "The Crimson Flame," is illustrated in colors, and a cross section view of the boiler is shown. A booklet printed in several colors gives sizes and ratings of the company's radiators, and illustrates various models. Specifications are also given for wall radiators.

Circular of Kewanee Boiler Corp.

Kewanee Boiler Corp., of Kewanee, Ill., is sending out a circular illustrating its slim type radiators. Two models are shown, one illustrated in gold and one in silver.

Calendar of Warren Webster & Co.

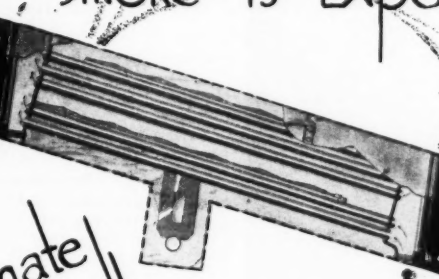
Warren Webster & Co., of Camden, N. J., is sending out a calendar 12 by 19 inches in size, with a sheet for each month. The January sheet contains an illustration of a department store, and a list of similar stores, in which the company's system of steam heating has been installed. Other sheets are illustrated with views of apartment buildings, telephone buildings, churches, etc.



Top row: C. W. Moreton, Buffalo, N. Y., representative of Duro Co., Dayton, Ohio; William Adams and Edwin C. Oakes, both of Chicago; J. S. Schieffer of Electro Flushing & Mfg. Co., West Allis, Wis. Bottom row: E. H. Fritz and J. R. Murphy, sales manager, both of Taco Heaters, Inc., New York City; Charles H. Bishop of Behel & Harvey, Chicago; Fred Thomson of Dole Valve Co., Chicago. Photos taken at the Buffalo convention, N. A. M. P.

Smoke Is Expensive~

THE SPECIAL~ SMOKELESS~ ARCH~



RIGHT ANGLE TUBE LAYOUT~ ALTHOUGH INCLINED

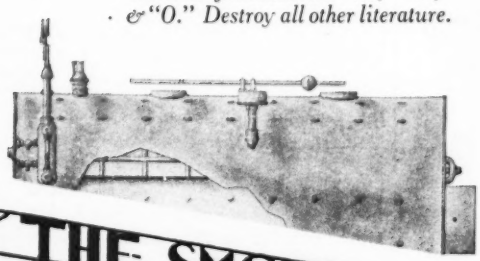
Eliminate It

Smoke is expensive because smoke is waste. Eliminate it! Knowlton Smokeless Boilers are built to do away with this nuisance and waste. Due to the Special Smokeless Arch the gases which ordinarily would escape as smoke are returned, trapped and filtered so that they have a chance to burn. The Tube Arrangement (a real Knowlton feature) makes heating action fast, efficient and economical.

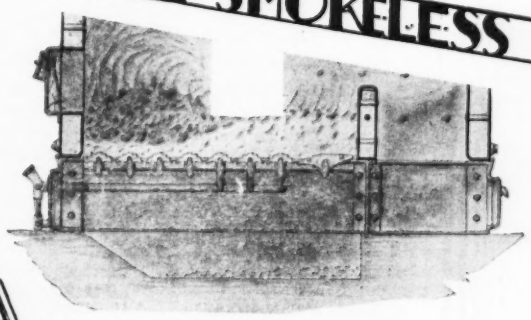
Investigate the Special Smokeless Arch in Knowlton Boilers. Let it prove itself to you as the exact vehicle you need to give your customers absolute heating satisfaction.

Write us for Bulletins "M," "N," & "O." Destroy all other literature.

The KNOWLTON BOILER



STUDY THE SMOKELESS ARCH AND TUBES



ORR & SEMBOWER, *Inc.*

READING, PENNSYLVANIA

208 N. Clinton St., Chicago 50 Church St., New York

COMPLETE · HEATING · SATISFACTION

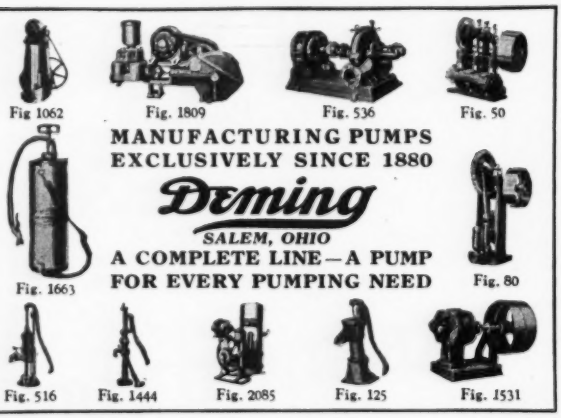
All Lead-Copper-Galvanized Iron

SIMPLEX AND JUNIOR FLASHINGS FOR EVERY ROOF CAN BE HAD IN EACH OF THE ABOVE METALS.

Write for prices and full information on the easily installed, durable SIMPLEX and JUNIOR Flashings.

SIMPLEX MFG. CO.
2644 N. Ashland Avenue
Chicago, Illinois

"Junior Flashings"



When you Recommend a **Kaustine** septic tank . . .

. . . . . not only is the good name of Kaustine behind every Kaustine Septic Tank—but likewise the highly respected name of Armco Ingot Iron. Every Kaustine Septic Tank bears the Armco Trade Mark. You do not gamble with your reputation when you recommend and install Kaustine Septic Tanks, for they are not only backed by these two nationally known organizations, but they are sold only through the plumbing jobbers.

KAUSTINE COMPANY, INC.
Perry New York

Pipelines Connected by L Y T

AN ORPHANAGE FOR SLOGANS

Miss M. E. M., of New York city, feels that there ought to be a "clearing house" for slogans which have been rejected in contests. Here is her idea:

"What becomes of all the unused names, slogans, etc., in the numberless contests always raging somewhere on the globe? In the United States at any rate. It is pitiful to think of the brain work of so many bright minds being consigned to limbo—these bright minds so often belonging to rather poverty-stricken creatures in this world's goods, each one hoping to get the $1,000, or $25, or even $5 share of the loot.

"Here is a sample rescued from the heap of unused potential money-making slogans for use in the electric heat industry, to boom which a slogan contest was advertised a few months ago. Now the contest is all over, perhaps it can be told, and can with perfect safety peer timidly out: 'Electric Heat—The Pinnacle of Performance.' This is not snappy like 'Investigate Electric Heat' but it has its points. There are doubtless many others that could be dragged forth and given an airing, for the benefit of a little-known phase of the electric heat industry. Another still better one was rejected, which might be mentioned here, but the author is a modest man and may not want it quoted.

"Of course there are many others which ought to see the light of day. If there were somewhere a general information bureau of unaccepted slogans, the world would be a brighter place."

Perhaps the poor sloganeers should not be so pitied. We recall the case of one gentleman—of Miss M.'s city, if memory serves us—who made so much money out of these contests that they had to debar him.

NATURAL HISTORY

Summer Boarder: "But why are those trees bending over so far?"

Farmer: "You'd be bending over, too, Miss, if you were as full of green apples as those trees are."

WASHINGTON DIRGE.

WE MORTALS

The horse and cow live thirty years,
They never touch light wines or beers.
Sheep and goats are dead at twenty—
They drink no hooch, but water—plenty.
At ten the cat has lost nine lives—
The beast on a milk diet thrives.
At five the birds are mostly dead,
They look not on the wine that's red.
A few days bugs may stay on earth,
They do not know the cocktail's worth.
But awful, wicked, rum-soaked men
Live on for three score years and ten.

THE BOOKAN WRAP.

IT ALL DEPENDS

"Come along, Pat. The boss has a job fer th' two av us. It's an asy job, just wheelin' dirt over a twelve-inch plank, fillin' up a bog."

The boss came around to see what progress the men had made about three hours later. One man was missing.

"Where's Pat, Mike?" asked the boss.

"He's up to his ankles in th' quick sand," sez Mike.

"Oh," sez the boss. "We can easy get him out."

"I don't think ye can," sez Mike. "He's in head furst."

B. K. S., Saltillo, Pa.

"SY" SEZ

If we don't have another war until the last one is paid for, it looks like a permanent peace.

"SY" MARTIN, Owensboro, Ky.

But the intervals between Christmas, Sy, remain the same.

L. Y. T.

Bath a Day Movement

An interesting letter from Saline, Mich., tells of the use again of "The Story of the Bath" at a local civic club meeting. M. Schroen, a plumbing contractor of that city, made a brief talk on "The Plumber's Service to His Community," and followed it with a distribution of copies of the booklet. The letter says: "The boys were highly pleased at the novelty of having something to take away to read." This use of "The Story of the Bath" is growing in popularity, particularly because the master plumber has something to give to his audience which will help to reinforce his message.

171

The Texas state association has ordered a supply of copies of "The Story of the Bath" to be distributed to the schools in those cities from which we have received requests for the booklet.

These requests come in constantly during the school year and the teachers find the booklet a great help in organizing classroom projects. As soon as a teacher's request is received we send a complimentary copy of the booklet and refer the inquiry to the local or state association, because one copy is not, of course, sufficient to take care of the needs of a class of any size.

Ask your secretary for inquiries from your city.

Epigrams—For Your Use

Beauty is nature's temporary gift to the fair sex.

* * *

We believe that there are as many rooster-pecked wives in the world as there are henpecked husbands.

* * *

Nothing so effectually cures a man of the flattery habit as marriage.

* * *

Lots of men are pleasant to talk to, but disagreeable to listen to.

* * *

Marriage is a means of grace when it leads to repentance.

* * *

The man who is always waiting for something to turn up is usually asleep when it finally comes along.

* * *

It is easier for a man to shut up a hundred-ton safe than a hundred--pound wife.

* * *

One-half of the world knows how to work the other half.

* * *

The man who blames the woman is one kind of jellyfish.

* * *

When a woman wants to loaf she leaves her pocket book at home and goes shopping.

* * *

The reason the earth isn't square is because it has rolled around so many years that the corners are worn off.

* * *

The average man never wants to arbitrate unless he is morally certain of his inability to lick the other fellow.

* * *

The wise bachelor praises the cooking of his friend's wife—if he wants another invitation to dine.

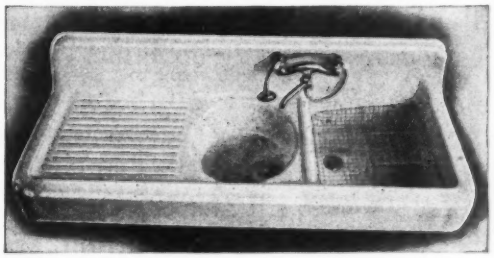
* * *

Sometimes a soft answer gives you a reputation for being mushy.

Air-Tight Steel Tank Co.
PITTSBURGH, PA.

TANKS

TANKS FOR: High pressure gas and air storage—Pneumatic water systems—Gasoline and oil storage—Oil burning equipment—Open top—Welded. ATSCO Genuine Copper Brazed tanks for high pressure—the tightest, safest, strongest tank it is possible to construct by any known process. A.S.M.E. code tanks.



The "EBCO" DISHWASHING SINK

Tested and Approved 2706 Good Housekeeping Institute Good Housekeeping Magazine

Featuring the permanent built in Dishpan. Write for details

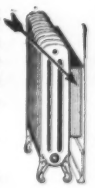
The D. A. Ebinger Sanitary Mfg. Co.
411 West Town St. Columbus, Ohio

Manufacturers also of Ventilated Closets, Urinals, Round Wash Sinks, Steel Partitions for Toilet Rooms, Drinking Fountains

SāVō Air Moistener

For Steam — Hot Water Radiators and Furnaces

Fill with water, hang on back of any radiator, ***out of sight.*** Other styles for Pipe and Pipeless Furnaces.



Most efficient, durable and sanitary humidifiers made.

GUARANTEED

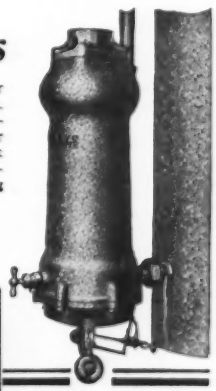
Good profit to the trade. Write for catalog showing prices and discounts.

SAVO MANUFACTURING COMPANY
113 W. Monroe St. Chicago, Ill.

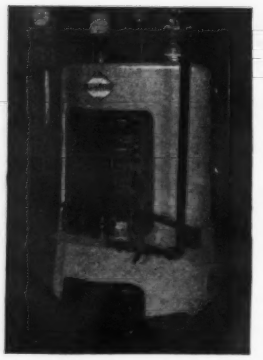
For Vapor Gas

The Vapor Gas Bull's Eye Water Heater makes its own gas from low test gasoline. The famous Bull's Eye principle of surrounding the heating element with water is employed in this heater with great success. Surprisingly low in price, decidedly high in quality, and heating efficiency.

The Dunham Company
Established 1846
Berea (Suburb of Cleveland) Ohio



Bull's Eye WATER HEATER



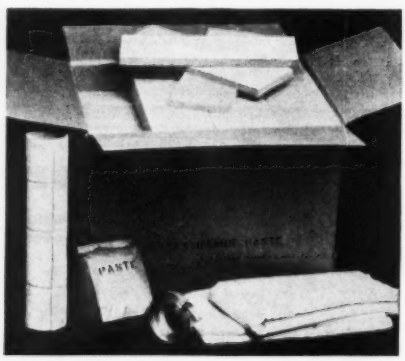
New PROFITS *in an* OLD FIELD!

Domestic Insulating Kits Sell Readily and Install Quickly

Home heating plants need insulation—need it as badly as commercial plants—but common insulations are of practically no value.

Selling is easy—most any home owner will buy an inexpensive insulation that reduces his fuel costs 25 to 40 per cent . . . It works equally well on hot air, hot water, vapor or steam.

Mineral Felt is an innovation as an insulating material — and the Mineral Felt Kit is even more revolutionary as a method of handling and application.

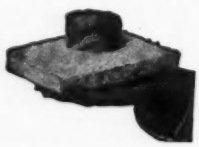


Here's the kit that does the trick

The Mineral Felt franchise is the biggest money making opportunity in the field. Full description, data, and proposition on request.

MINERAL FELT — WHAT IT IS —

Mineral Felt is a mineral product which has been felted into blocks with over a million dead air cells per cubic inch. Its efficiency is six times asbestos cement, and twice that of magnesia. It is resilient and pliable, can be bent around curved surfaces, and cut with a knife. Applied without cement or wires by any service man.



Red hot steel 1600 degrees F. held in hand until cool, separated by 1" of Mineral Felt.

The MINERAL FELT INSULATING CO.
TOLEDO, OHIO

MINERAL FELT PIPE COVERING

(Steel clad)

The same characteristics that have brought nationwide recognition to the Mineral Felt products give distinction to this pipe covering.

Each section comes solidly closed around a paper mandrel of the pipe size, insuring perfect fit, and the metal shell has an interlocking joint that can be instantly opened or closed.

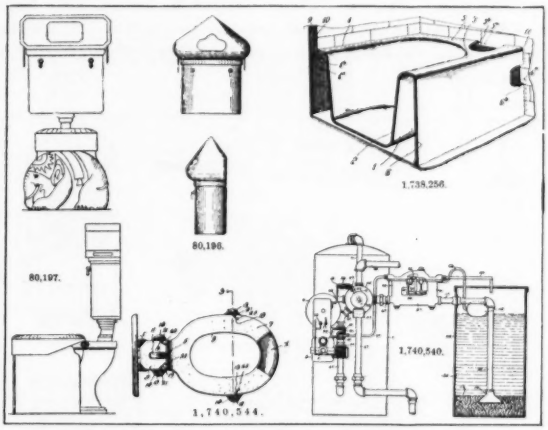
It is fireproof, non-absorbent and unimpaired by wetting and drying. It can stand repeated contraction and expansion. It is inert and unaffected by chemicals or fumes. It is the ideal protection for either outside or inside work.

MINERAL FELT

PATENTS

Plumbing Department

1,738,256. Bathtub and Similar Structure. Jean A. Miller, Blue Island, Ill.



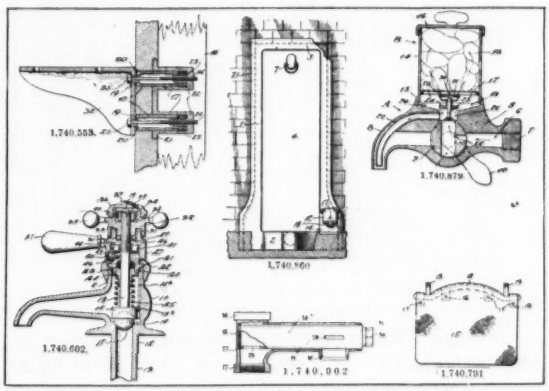
80,196. Cabinet for Flush Tank. Bert O. Tilden, Trenton, N. J., assignor to B. O. T. Mfg. Co., Trenton, N. J., a Corporation of New Jersey.

80,197. Water-closet Combination. Bert O. Tilden, Trenton, N. J., assignor to B. O. T. Manufacturing Company, Trenton, N. J., a Corporation of New Jersey.

1,740,540. Water-softening Apparatus. Charles P. Eisenhauer, Dayton, O., assignor to The Duro Company, Dayton, Ohio, a Corporation of Ohio.

1,740,544. Sanitary Attachment for Toilet Seats. Otto Richard Kuehne, Redlands, Calif.

1,740,553. Plumbing Fixture. Victor E. Schmiedeknecht, Louisville, Ky.



1,740,602. Convertible Faucet. John M. Keeler, New Brighton, Pa., assignor of one-half to Charles R. Welsh, New Brighton, Pa.

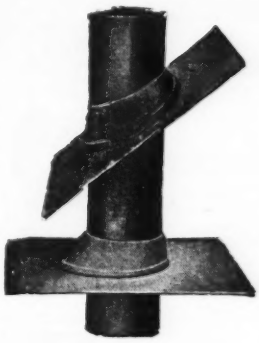
1,740,791. Back Rest for Bathtubs. Mitchell Stern, Philadelphia, Pa.

1,740,860. Urinal. Abel Hansen, Metuchen, N. J.

1,740,879. Faucet. Carl J. Sonner, Los Angeles, Calif.

1,740,902. Sanitary Trap Fitting. Robert Nicholas Murphy, Ottawa, Ontario, Canada, assignor of twenty-eight and three-fourths per cent to the estate of James S. Wilson, deceased, and of eleven and one-fourth per cent to Harry R. Meredith, Ottawa, Ontario, Canada.

1,737,734. Combination Valve and Swing Spout. Louis



You can buy a good roof flashing for less money than it costs to make a poor one. Oatey 4 in 1 Roof Flashings cost less than the cheap, home - made affair because they never cost more than the first cost.

The pure lead collar, which gives the least resistance to proper caulking also insures long, leak - proof life and continued neat appearance upon the roof.

Order Oatey 4 in 1 Roof Flashings from your jobber.

L. R. OATEY CO.
5500 Walworth Ave.
CLEVELAND :: OHIO

Good-Bye to RUSTY Hot Water

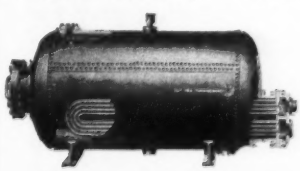
Now there is no need to countenance *rusty* hot water. For water comes out of the Patterson Indestructo Hot Water Heater as clean as it goes in.

This heater consists of a steel shell completely lined with a *copper* shell and water does not come in contact with anything except copper. That gives the Patterson Indestructo two important advantages in addition to rust-free water.

First, as copper is non-corrosive, there is no rust to eat holes in the metal, therefore this heater is practically everlasting. We absolutely guarantee the Patterson Indestructo Heater to prevent discoloration of water from rust.

Second, the sturdy steel shell, reinforced by the copper shell, gives added strength.

We can refer to hundreds of Patterson Indestructo Heaters throughout the country that have been in use for years.



Catalog and prices sent on request.

The Patterson-Kelley Co.
106 EAST 40th STREET
NEW YORK, N. Y.

Patterson INDESTRUCTO COPPER LINED Hot Water Heater

Made for Men Who Want Good Tools

Do *quality* tools pay? And HOW! A Plomb tool may cost a little more in the beginning, but outlasts several ordinary tools. Hand-forged from finest steel. Scientifically heat-treated. You'll be surprised how long it holds edge or point. See the Plomb display board at jobbers.

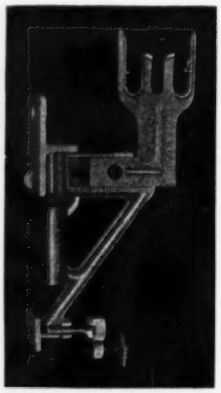
Ask Your Jobber's Salesman for

PLOMB TOOLS

HAND-FORGED

PLOMB TOOL COMPANY—LOS ANGELES: 2209 Santa Fe
CHICAGO: 1146 W. Lake St. NEW YORK: 47 W. 63rd Street

TU-BU-LUR
RADIATOR BRACKETS



This high grade universal radiator bracket hangs all types of tube radiators. Three sizes meet all weight requirements. Each bracket requires only one anchor bolt. All up, down, and sideway adjustments are easily made with a screw driver. The Tu-Bu-Lur has superseded dozens of less efficient styles. Place your order now. Distributed by the U. S. Radiator Corporation. For sale by all leading jobbers.

LITTLE GIANT MFG. CO.
1407 Third Ave. S. Minneapolis, Minn.

DOMESTIC ENGINEERING's Retail Advertising Service makes advertising easy for you—all you do is clip the copy from your copy of the paper and hand it, with the cut we send you, to your newspaper. Only $4.20 for 12 illustration cuts. Clip this, attach your check for $4.20 and mail today.

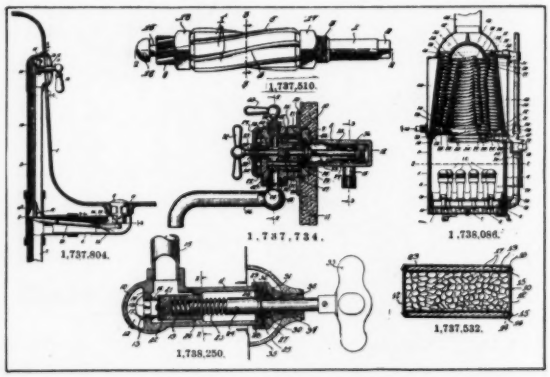
DOMESTIC ENGINEERING
1900 PRAIRIE AVENUE, CHICAGO, ILLINOIS

Schlesinger and Herman E. Heine, Milwaukee, Wis., assignors to Bradley Washfountain Company, Milwaukee, Wis., a Corporation of Wisconsin.

1,737,804. Waste-Valve Device for Bathtubs, Etc. Emmett M. Reedy, Decatur, Ill., assignor to Mueller Co., Decatur, Ill., a Corporation of Illinois.

1,738,086. Water Heater. Frank L. O. Wadsworth, Pittsburgh, Pa.

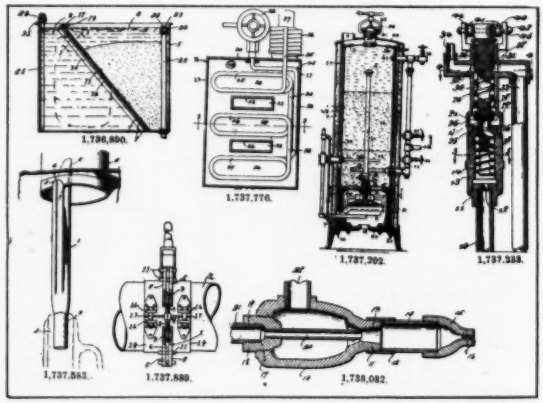
1,738,250. Faucet Valve. Julius S. Judell and Jacob P. Bittel, Milwaukee, Wis., assignors to The Milwaukee Flush Valve Company, Milwaukee, Wis., a Corporation of Wisconsin.



1,737,510. Reamer. Lawrence E. Miller, Cowen, W. Va.

1,737,532. Air Purifying and Deodorizing Device. George B. Allen, Atlanta, Ga.

1,736,890. Water-Softener Brine Tank. Orland Russell Sweeney, Ames, Iowa, assignor to Ward-Love Pump Corporation, Rockford, Ill., a Corporation of Illinois.



1,737,202. Water Heater and Softener. Paul P. Runnels, Indianapolis, Ind., assignor of one-half to Geo. A. Schaal, Terre Haute, Ind.

1,737,233. Means for Controlling the Discharge of Water Into Flush Tanks. William U. Griffiths, Philadelphia, Pa.

1,737,776. Mechanical Refrigeration. Charles C. Spreen, Detroit, Mich., assignor to Kelvinator Corporation, Detroit, Mich., a Corporation of Michigan.

1,738,270. Refrigerating System. Glenn Faber Zellhoefer, Bloomington, Ill.

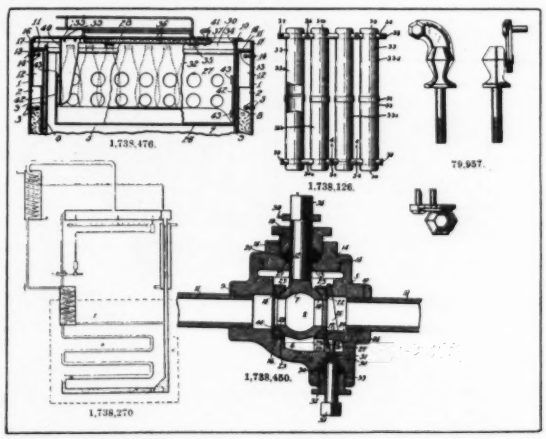
1,738,126. Refrigerating Apparatus. Elmer O. Stout, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware.

1,738,450. Valve. Edward F. Ryan, Binghamton, and Edward T. Adams, Johnson City, N. Y., assignors to The

Fairbanks Company, New York, N. Y., a Corporation of New Jersey.

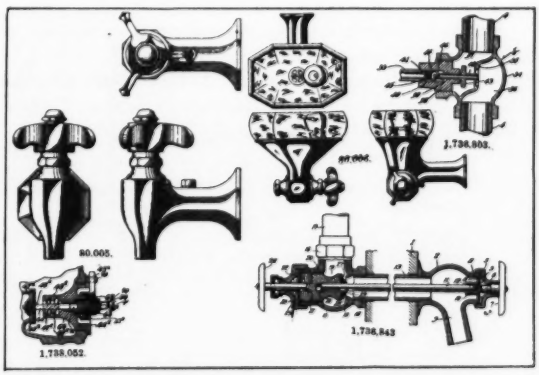
1,738,476. Refrigerator. Samuel Kaye, Columbus, Miss., and Chester A. Frick, Muncie, Ind.; said Frick assignor to said Kaye.

79,957. Toilet-Seat Hinge. Howard P. de Correvont, Chicago, Ill., assignor to The Brunswick-Balke-Collender Company, Chicago, Ill., a Corporation of Delaware.



80,005. Faucet for Water Coolers or the Like. De Witt H. Wyatt, Columbus, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware.

80,006. Combined Bubbler and Drain Basin for Water Coolers or the Like. De Witt H. Wyatt, Columbus, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware.



1,736,803. Shower. Thomas C. Shields and Wallace J. Cameron, Los Angeles, Calif.

1,736,843. Dual-Control Sill Cock. George Benson, Hinsdale, Ill.

1,737,163. Foldable Child's Combined Ladder and Auxiliary Toilet Seat. Urban A. Keppinger, Portland, Oreg.

Heating Department

1,737,889. Pipe-Cutting Apparatus and Method. Charles C. McKnight, La Mirada, and Frank H. Koch, Los Angeles, Calif.

1,737,583. Beading Tool for Boiler Flues. James R. Furstenburg, Cumberland, Md.

1,738,082. Oil Feeding and Discharge Means for Oil Burners. George W. Stark, Astoria, Oreg., assignor of one-half to Joe Dimitroff, Astoria, Oreg.

1,738,100. Radiator. Robert R. Goshorn, Jasonville, Ind., assignor to The All-Ways-Hot Mfg. Co., Jasonville, Ind.

EXPAN HUB
SOIL PIPE

A real solution of the troubles caused in soil, waste and vent lines by their contraction and expansion, and the natural settlement of buildings. For the specially designed gasket, inserted in each hub, absorbs all these movements keeping the stack true and the joints gas tight.

Manufactured and Sold by

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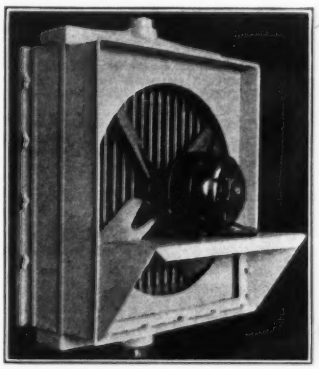
Anniston, Ala.
342 Madison Ave. New York, N. Y.
122 S. Michigan Ave. Chicago, Ill.
1749 Sacramento St., San Francisco, Calif.

STRINGER BROS. CO., Inc.
Gadsden, Ala.
1100 W. 38th St. Chicago, Ill.
128 Sidney St. Cambridge, Mass.

PAINE
Flattened End Lag Screws

Made in four sizes and furnished with bolts
¼ x 3 ⅛ x 3½ ⅜ x 4 ½ x 5
Will fit any standard lag screw shields of corresponding sizes
Send for samples and prices
THE PAINE COMPANY
2949-83 Carroll Ave., Chicago, Ill. 79 Barclay St., New York, N. Y.

DIXIE UNIT HEATERS

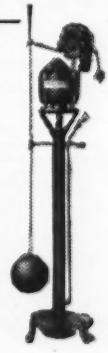


Specify and install the unit heater with the patented compression coupling which a five ton pull could not break.

Write for the details of the Dixie Unit Heater

THE DIXIE BLOWER COMPANY
1351 W. 37th Pl., Chicago

The PEERLESS



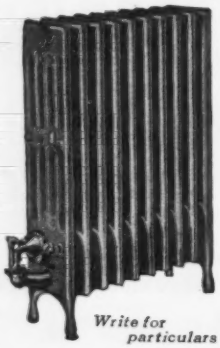
Automatic Electric Sump Pump and Cellar Drainer

A positive, dependable drainer that is easily installed and may be depended upon to give constant service.

It is sold under a strict money back guarantee.

Write for complete details

Manufactured by
PEERLESS MFG. CO.
Incorporated
East Norwalk Connecticut



Write for particulars

Now!

Now is the time to sell Automatic Gas-Steam Radiators. Let them keep you busy during the winter.

They'll sell readily and they'll pay a neat profit that will more than repay the little sales effort they require.

AUTOMATIC GAS-STEAM RADIATOR CO.
Pittsburgh, Pa.

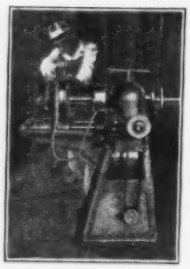
No. 30 Capacity ⅛ to 2"

THE PIPE MASTER

When you once get The Pipe Master you'll wonder how you ever got along without it. But you needn't do without it another week. Write us now, TODAY, about our free trial offer and about the many advantages of The Pipe Master. Let us tell you how it will save you money.

SPENCER REGULATOR CO.
Salem, Mass.

Turning Scrap Pipe into Dollars $$$$$



Besides getting *three times faster* threading on all their regular work with their WILLIAMS Portable Threading Machine, Ambrose Bros., of San Leandro, Calif., have had a very profitable by-product. They write:

"Our WILLIAMS Portable showed us the way to turn nine barrels of scrap pipe into dollars. As for speed, it does three times as much work as other pipe threading methods."

We'll be glad to send you reports from other users of WILLIAMS Portables.

WILLIAMS TOOL CORP.
1203 Liberty St. Erie, Pa.
Canadian Plant: Brantford, Ontario

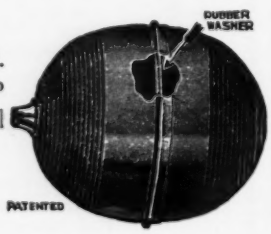
WILLIAMS PORTABLE
PIPE, NIPPLE AND BOLT THREADER

And write for our booklet "THE STORY of EXTRA PROFITS"

NO-SOL FLOATS

Each float individually tested and guaranteed to have *all* the features essential to satisfactory tank float performance.

THE AYLING & REICHERT CO.
4037 N. Erie St. Toledo, Ohio

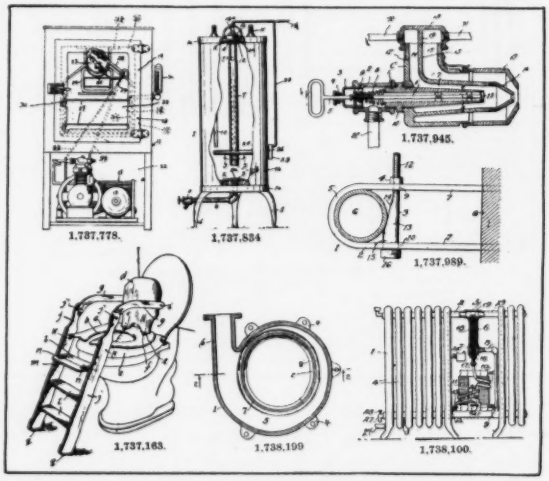


1,737,778. Cooling Unit for Refrigerators. Charles C. Spreen, Detroit, Mich., assignor to Kelvinator Corporation, Detroit, Mich., a Corporation of Michigan.

1,737,834. Heater. Harold D. Eaton, La Porte, Ind., assignor to Bastian-Morley Co., La Porte, Ind., a Corpo- assignor to Bastian-Morley Co., La Porte, Ind.

1,737,945. Liquid-Fuel-Burner Nozzle. Albert V. Rigby, Sharon, Pa., assignor of one-half to Carl J. Mehler.

1,737,989. Pipe Support. George Wollenschlager, New York, N. Y.



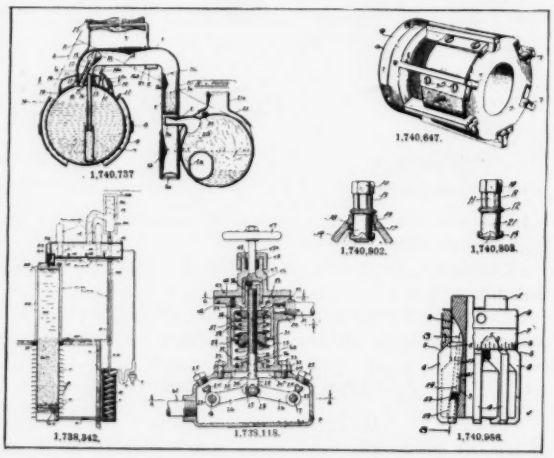
1,738,199. Fuel Burner. Ernest H. Peabody, Pelham Manor, N. Y., assignor to Peabody Engineering Corporation, New York, N. Y., a Corporation of New York.

1,738,052. Inset Valve for Radiators. Charles D. Hickman, Philadelphia, Pa.

1,738,342. Refrigerating System. Glenn Faber Zellhoefer, Urbana, Ill.

1,740,647. Reamer. Marvin C. Daw, East Cleveland, Ohio, assignor to The Kelly Reamer Company, Cleveland.

1,740,737. Refrigerating Device. David Forbes Keith, Toronto, Ontario, Canada.



1,738,118. Fluid-Pressure-Control Mechanism for Oil-Burning Apparatus. Edward Bromley Rodgers, New York, N. Y., assignor to Olive M. Perkins.

1,740,802. Pipe Hanger. Lothar R. Zifferer, Columbia, Pa.

1,740,803. Pipe Hanger, Lotha R. Zifferer, Columbia.

1,740,986. Expansion Reamer. James E. Kilzer, St. Boring Tool Company, St. Louis, Mo.

PAGE(S) MISSING

Pages 183-188 were index for v. 120.

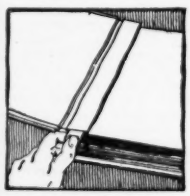
THE HANDY SPEEDLOK
Domestic Engineering Catalog Binder

Especially designed for the standardized catalog page adopted by the plumbing and heating industries

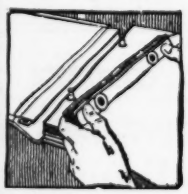
The SPEEDLOK is a quick operating catalog binder designed to fit reprints of catalog pages in "Domestic Engineering Plumbing and Heating Catalog" as well as all other catalog pages that conform to the standards adopted by the plumbing and heating industries.

Easy and speedy operation are special features of this binder. A slight pull on the concealed bar under the top cover unlocks mechanism when sheets are inserted. Equipped with bar for removing sheets when changes are made.

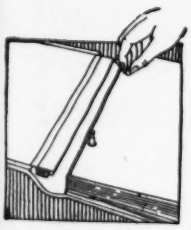
Minimum capacity 1¼ inches. By simply unscrewing extension posts capacity can be extended to 2¼ inches. Works perfectly for all requirements—either a few sheets or filled to capacity.



Covers are bound in heavy black Levant Grained Fabricoid, semi-flexible, very durable and attractive looking.

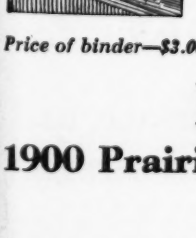


To unlock Binder—Pull out slide bar in top wing. Top cover will immediately fall back.



To lock Binder—bring top wing back over the posts—be sure posts fit in the holes in the top wing—then push in slide bar.

Separate the sheets where desired and slip sheets off the posts. Take out sheets or put in new ones as desired. These three moves take but a few seconds. Each operation is a natural one.



To increase or to decrease the capacity of the binder is a simple operation. The two posts are so constructed that they can be easily raised or lowered to meet the height requirements. Binder posts can be extended from 1¼ inches to 2¼ inches.

Price of binder—$3.00. Prices on quantities on application.

For Plumbing and Heating Contractors—

Many master plumbers and steamfitters assemble working catalogs from standardized catalog sheets filed in binders.

Domestic Engineering is in position to furnish without charge, upon request, loose sheets—which are reprints from catalog pages appearing in "Domestic Engineering Plumbing and Heating Catalog"— of several hundred manufacturers. They are standard catalog page size — 10⅝ x 8½ inches — are printed on a good grade of light paper and punched according to the standard adopted by the plumbing and heating industries. These sheets fit the SPEEDLOK binder.

For Jobbers' Salesmen—

The loose-leaf system reduces to the minimum the bulk and weight of catalog material required by the salesman. Only matter actually required for selling purposes need be carried in the binder. It does away with the necessity of carrying entire catalogs, booklets and circulars of various sizes and shapes.

Salesmen using the loose-leaf system have a great advantage over men not using this equipment—to say nothing of the added convenience, time and labor-saving features.

With a modernly equipped loose-leaf binder, the salesman can present his products in a more comprehensive manner than it is possible to accomplish by the old methods. Having all his material up to date in compact form and easily available, he can show latest specifications, answer questions or quote prices more readily.

When orders for binders are accompanied by requests for catalog reprints the binders will be equipped with the sheets desired and shipped complete.

Write for full details regarding loose sheets and binders.

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1900 Prairie Avenue *(Catalog Department)* **Chicago, Illinois**

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8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion. One inch $4.00.

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MANUFACTURER'S REPRESENTAtive to sell complete line of plumbers' brass goods to jobbing trade. Address Key 448, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

SALES REPRESENTATION BY PROMinent Boiler Manufacturer to sell boilers to heating contractors in several good locations in the United States. Want only aggressive salesmen or sales organizations selling other than boilers now calling and acquainted with the heating contracting trade. An exclusive line. Address Key 453, "Domestic Engineering," 1900 Prairie Ave., Chicago.

REPRESENTATIVES WANTED IN leading cities to handle highest grade line of radiator shields and radiator cabinets. Our representatives earn $500.00 to $1,000.00 per month the year around, above expenses. Full selling plan furnished. **Address Key 256, "Domestic Engineering," 1900 Prairie Ave., Chicago.**

SALESMEN WANTED TO SELL LINE of plumbers' brass goods to trade direct. Strictly commission basis. Address Key 447, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

LARGE MANUFACTURER OF BOILers, Radiators and heating equipment requires the services of salesmen experienced in the Chicago territory. Address Key 460, "Domestic Engineering," 1900 Prairie Ave., Chicago.

MANUFACTURERS' SALARIED Salesman: An opportunity presents itself for a competent representative to sell the plumbing wholesaler. State particulars and send photograph. Address Key 456, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

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PLUMBING AND HEATING EXECUtive with twenty years experience in superintendence and management, who is also a graduate engineer, desires to make change, available on short notice. Address Key 458, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Lines Wanted

COMPLETE BRASS AND SPECIALTY Line for the States of Washington and Oregon wanted by experienced salesman on commission basis. Address Key 454, "Domestic Engineering," 1900 Prairie Ave., Chicago.

Lines to Handle

DISTRIBUTORS WANTED

The States of New Jersey and Connecticut are available for a distributor of the well known Bryan Steam and Hot Water Copper Tube Boiler. Especially Designed for Oil or Gas Fuel.

Saves 35 to 50 per cent in Fuel Consumption.

Will only consider concern or individual who is financially responsible.

Bryan Boiler Company
Greenwich, Conn.

SALES REPRESENTATIVES WANTED for the Gorton Single Pipe Vapor Heating System, in territories now open. State experience and other lines handled. Communications held confidential. Gorton Heating Corporation (Manufacturers), Established 1887, 96 Liberty Street, New York.

WANTED: ESTABLISHED MANUFACturers' Representative to handle a line of tubular brass goods in Michigan and Indiana. Address Key 457, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED — MANUFACTURERS' agency representation in the territories of Kansas City and vicinity and various points in the state of Texas. As our line is a high class heating line, we do not wish to hear from anyone unless he is familiar with the heating trade in the territories above mentioned. Address Key 439, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

DISTRIBUTORS — NEW SPECIALTY for Plumbing and Heating Trade, sells on sight, liberal commission and repeats. State lines handled, references, territory. The "SILENT SALESMAN" Co., 801 Hampson St., Baltimore, Maryland.

Books for Your Trade Library

OVERHEAD EXPENSE AND PERCENTAGE METHODS. By Henry F. Baillet. Master plumbers and steamfitters are realizing more and more the importance of including their overhead expense as a part of each contract. It is the only sure way of showing the correct margin of profit on business handled for the year. In compiling this book, Mr. Baillet has used data taken from actual business experience. Shows how to figure properly the cost of doing business and the correct percentage of profit on any contract. A book worth many times its cost. Size, 4½x7 in. 128 pages. 24 tables. Cloth. Price, $1.50.

SANITARY SEWERAGE OF BUILDINGS. By Thomas S. Ainge. Beginning with a study of outside sewers, this book goes fully into the best practice in inside connections, proper location and size of soil waste, and vent pipes and the roughing-in test up to the filling in of the trenches. 40 pages are devoted to the important subject of traps. Sewage disposal for country homes is also given full consideration. Size 5½x8 in. 200 pages. Cloth. Price, $1.50.

How is the horsepower of a tubular boiler determined? What is a vacuum? What is evaporation? What is buoyancy of a liquid? What is condensation? What is fluid friction? How are joints to be tested for leaks? What is a riser?

These questions and scores of others are given with clear, concise answers in "Questions and Answers on the Practice and Theory of Steam and Hot Water Heating." Carefully classified to aid quick finding, these questions and answers will be put to every day use by the heating man.

Substantially and attractively bound in cloth, this book will prove a valuable addition to your library. Send $2.00 to Domestic Engineering Book Dept. and we'll post the book to you by return mail.

DOMESTIC ENGINEERING
Book Department
1900 PRAIRIE AVENUE CHICAGO, ILL.

ADVERTISING

Cash must accompany order. Copy should reach us eight days in advance of publication date.

THE TABLE OF ESTIMATED RADIATION. By Harry B. Perrigo. Gives the accurate amount of radiation required for any size room. Computed from standard recognized rules and simplified to a degree that makes it readily understood by any man with even a limited knowledge of heating. Two tables—one for steam and the other for water—are printed in two colors on heavy celluloid—making four pages in all. Substantially bound. Size 4½x7¼ in. Saves time and eliminates errors. Price, postpaid, $1.00.

STANDARD PRACTICAL PLUMBING. By R. M. Starbuck. Eighth revised and enlarged edition. An exhaustive treatise on all branches of plumbing construction, including drainage and venting, ventilation, hot and cold water supply and circulation. Shows the latest and best plumbing practice, special attention being given to the skilled work of the plumber and to the theory underlying plumbing devices and operations. Contains 347 original illustrations, each drawn expressly for this work. A book every master plumber should have in his trade library. Size, 6x9 in. 406 pages, bound in cloth. Price $4.00.

PRACTICE AND THEORY OF SANITARY PLUMBING. By R. M. Starbuck. Vol. I. Contains 500 questions with complete and comprehensive answers, covering everything the plumber should know regarding drainage and latest requirements in plumbing practice. Explains technical terms, gives rules and tables and is fully illustrated. So popular has this book become that the 12th edition has been published. The combined set of four volumes makes a complete preparation for Board of Health and union examinations. Size 6x9 in. Cloth. Price $2.00 per volume, or $7.00 for the four volumes.

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The standard educator; teaches the theory and practice of plumbing, heating, steamfitting, gas-fitting and sheet metal work. Answers your questions. Explains the new shortcuts, modern methods and inside trade information. Easy to understand. A complete reference and home study course. Fully illustrated, authentic, up-to-date, with plumbers' code. Four volumes, pocket size; price $6 complete, payable $1 a month. Write today for FREE Plumbers' Folder. Theo. Audel & Co., 65 W. 23d St., New York.

MANUFACTURER OF PLUMBERS brass goods is interested in securing good inventions, royalty or buy outright. Address Key 422, "Domestic Engineering," 1900 Prairie Ave., Chicago.

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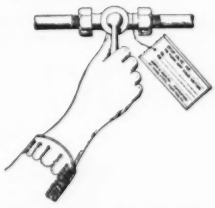

An Everlasting And Non-Soiling Advertisement for the Plumber

Just to sit back and wait for business to push the door open will never make competitors howl. THEY'RE OUT AFTER BUSINESS—even if you are not.

Not only in every new operation of houses should you place our stop valve tags with YOUR NAME AND ADVERTISEMENT, but on every repair job in new and old houses, you should at every opportunity put on these stop valve tags.

Printed with your name and address make an everlasting advertisement. Send for samples and prices.

HADDON BIN LABEL CO.
Haddon Heights, N. J.

Your
PIPE COUPLINGS
are
VALUABLE

Sell them to us. We have a reputation as the most reliable buyers of couplings in the country. Write to

CAPITOL MFG. & SUPPLY CO.
550 Nicholas St., · Columbus, O.

STOP "GUESSTIMATING"
Avoid Errors and Omissions. Our
Plumbers' Estimate Sheets
will SAVE Time and Money.
100 leaves in a book—4½x10,
1 Book, $1.25 5 Books, $5.
via Ins. Parcel Post same day we get order.
LOUIS FINK & SONS CO., Printers.
Time Sheets, Job Tickets, Letter Heads, etc.
School Bldg., Laurel Springs, N. J.
In Business Thirty Years. Noted for Quick Service

PORTABLE PIPE MACHINES
LIKE NEW—Used on one job

6-in. Oster Pipe Machine, mounted on 4-wheel truck and driven with a gasoline engine.

4-in Oster Pipe Machine, mounted on 4-wheel truck and driven with a gasoline engine.

2, 2-in. Oster Pipe Machines, mounted on 4-whee truck and driven with a gasoline engine.

THE O'BRIEN MACHINERY COMPANY
113 North Third St. Philadelphia, Pa.
Long Distance Telephone: Market 0727
Cable Address: "OBRIEN" PHILADELPHIA

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If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on these pages will put you in touch with the people you desire to reach.

The cost of insertion is only eight cents a word and may mean many dollars to you.

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Complies with State Code of Ohio.

INSTALL FLOOR DRAINS THAT PROTECT!

SIGNET and GATEWAY Backwater Trap Floor Drains safeguard health and property from sewer gas, sewage and backwater. Automatic operation — sanitary — efficient — reliable — durable. Backwater valve seals perfectly wet or dry. Makes satisfied customers. Write for details and prices.

Crampton-Farley Brass Co., Kansas City, Mo.

SIGNET
Self-Acting Trap keeps back sewage and backwater. Made of heavy cast, valve parts of brass.

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***Executive Offices:* 55 West 42nd Street, New York, N.Y.**
National *Made-to-Measure* Heating Systems
National Bonded Boilers National Aero Radiators

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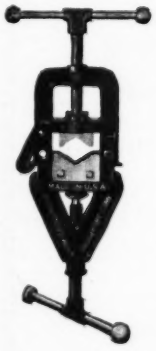

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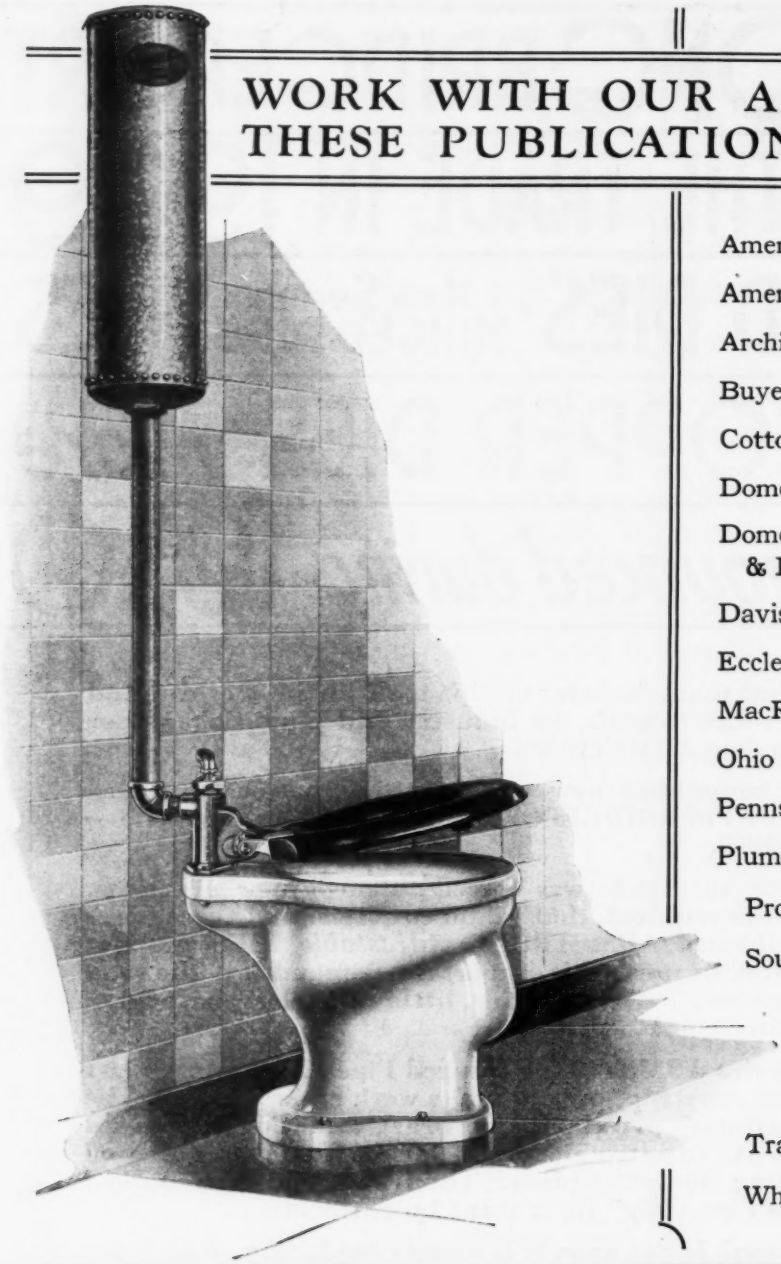

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